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# USSR Report

ENERGY



FOREIGN BROADCAST INFORMATION SERVICE

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The following selections from Soviet media on the aftermath of the Chernobyl Nuclear Power Plant accident and the mobilization of labor and technology in the clean-up effort will be published in the series USSR REPORT: POLITICAL AND SOCIOLOGICAL AFFAIRS under the subtitle AFTERMATH OF CHERNOBYL NUCLEAR POWER PLANT ACCIDENT. This is a representative list of the items selected for that report.

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Minsk SOVETSKAYA BELORUSSIYA in Russian 8, 9 May 86 pp 3, 4

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Kiev PRAVDA UKRAINY in Russian 13 May 86 p 3

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Moscow Domestic Service in Russian 1435 GMT 16 May 86

### **ACTIVITIES AT KIEV VEGETABLE MARKET**

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Moscow Domestic Service in Russian 1430 GMT 19 May 86

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Moscow LITERATURNAYA GAZETA in Russian 21 May 86 p 10

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## ENERGY

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OIL AND GAS

TECHNICAL PROGRESS IN HASTENING OIL, GAS WELL CONSTRUCTION

Moscow SOVETSKAYA GEOLOGIYA in Russian No 10, Oct 85 pp 3-8

[Article by A.A. Voloshin]

[Abstract] The importance of work planning and organization, financing, and application of technical progress in drilling of deep petroleum and natural gas wells to reduce their construction cost is discussed. Use of economics in every stage of well construction is emphasized. Figures 0; references 3: 3 Russian.

RESEARCH IN OIL LOSSES DUE TO EVAPORATION

Baku AZERBAJDZHANSKOYE NEFTYANOYE KHOZYAYSTVO in Russian No 10, Oct 85 pp 33-36

[Article by A.B. Suleymanov, A.P. Gaziyants, V.D. Yurchenko, I.A. Grigoryan]

[Abstract] The effect of temperature, storage time, and crude oil properties on losses of crude oil during storage in 5,000-cubic meter vessels was studied. The loss of 0.3-1.3 percent of vessel content increased with increased crude oil and ambient temperatures and storage time. The importance of vessel tightness and vapor recovery systems of vessels was emphasized. Figures 3; references 3: 3 Russian

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## ALTERNATE FUELS

### ACADEMY OFFICIAL ON STATUS OF GEOTHERMAL DESIGNS AT KAMCHATKA

Moscow PRAVDA in Russian 8 Apr 86 p 3

[Article by Deputy Chairman of the USSR Academy of Sciences Scientific Council on Geothermal Research I. Dvorov, Petropavlovsk-Kamchatskiy--Moscow: "Kamchatka Heat: Where Do the Underground Rivers Flow?"]

[Text] The whole world devotes great attention to energy sources that are not connected with the combustion of fuel. One of these is underground heat. In volcanic regions, where the strata are heated in places right up to the surface, it is manifested in the form of hot or boiling springs, geysers and steam jets at high temperatures. In non-volcanic regions, it is deep thermal water.

Superheated water can be utilized for producing electricity, hot fresh water for communal heating-supply and process purposes, salt water for balneology and brine for industrial raw material.

Notwithstanding the economic benefits, the production of power by geothermal electric power plants is still growing at a slow rate.

There are several reasons for this. There are not that many volcanic regions, and there are difficulties associated with drilling in them: high temperatures and the danger of a catastrophic blowout of the steam and water mixture. More improved drilling equipment is required, and there is still very little of it. Therefore, the surveying of geothermal deposits is conducted with standard equipment that is not rated for such harsh conditions. By the way, many countries are achieving appreciable successes today. By way of example, the capacity of geothermal plants in the Philippines totals more than 900,000 kilowatts along with 202,000 in New Zealand. Against this background is contrasted the single geothermal electric power plant in the USSR, the Pauzhetka with a capacity of 11,000 kilowatts.

Kamchatka is the region of our country richest in highly thermal sources. Hopes for the rapid development of geothermal power engineering here appeared in 1967, when the Pauzhetka GeOTES [geothermal electric power plant] entered service. It has already operated successfully for 19 years. The cost of the electricity it produces is three times less than diesel plants of the same

capacity. It would seem that all is well, but... the plant's capacity is only 40 percent utilized.

This strange phenomenon of power engineering is explained by the lack of... consumers. But is that so? In fact, over the course of many years USSR Minenergo [Ministry of Power and Electrification] and the Ministry of the Gas Industry, responsible for the "production" of the deep heat of the earth, have been unable to agree on the value of the electricity for the everyday and economic needs of the workers' town of Ozernovskiy. As a result, half of the equipment of the plant is in reserve, and 17,000 cubic meters a day of 100-degree water is poured into the Pauzhetka River. The town consumes 36,000 tons of imported coal a year. In the meantime, a pipeline could be brought from the Pauzhetka GeOTES for heating supply. What is more, pumps would not even be needed, as the water flows on its own insofar as the altitude of the town is lower.

Geological prospecting work has been underway since 1978 in the Mutnovskoye geothermal field, located 70 kilometers from Petropavlovsk-Kamchatskiy. This is the largest field on the peninsula. The plan envisaged that in 1983 the prospecting should have discovered heat-bearing reserves for the first phase of a 50,000-kilowatt geothermal electric power plant. In the course of exploratory prospecting operations, the Kamchatskgeologiya [Kamchatka Geological] Production Association drilled dozens of wells. Their unsatisfactory technical conditions, however, narrow diameters and, frequently, insufficient depths did not provide complete and precise information on the field. The drilling equipment utilized did not withstand the high temperatures and pressures, and accidents occurred.

The Ministries of Geology of the USSR and the RSFSR, in order to rectify the situation, developed a number of technical and organizational measures. The Mutnovskoye Geological Expedition is now subordinate to the Sakhalinskgeologiya [Sakhalin Geological] Production Association. Specialists from Sakhalin arrived at the field. Drilling rigs were equipped with large petroleum-series drills and with technical equipment intended for high-temperature and high-pressure conditions. Soon a well was drilled with a depth of 1,311 meters.

It would seem that matters had progressed from a dead stop. But other difficulties arose. There are no spare parts, all-terrain gasoline tankers or roads from the prospectors' town to the field. There is not enough housing or places in kindergartens and nurseries. The lack of a solution to the everyday problems engenders turnover in the personnel.

As we see, the difficulties that complicate the work of the Mutnovskoye Expedition are not of the type that can be handled with one's own manpower. It requires the attention and the cooperation of local organizations. Unfortunately, the expedition is not receiving the needed support. The impression has been created, for example, that the Kamchatskgeologiya Association has altogether dissociated itself from the prospecting for steam thermal springs in the Mutnovskoye field and has adopted a temporizing position. Let's see, they say, how the Sakhalin geologists handle this task.

The USSR Ministry of Geology obligated the Sakhalinskgeologiya Association to conduct prospecting and survey work and to confirm the reserves of the steam thermal springs of the USSR GKZ [State Commission on Mineral Resources]. This is necessary for the development of the construction of a 50,000 kilowatt geothermal electric power plant. But much remains in question. There is still no plan. The institutions of USSR Minenergo still have not begun the development of the necessary equipment and turbines for this GeOTES. Won't it be necessary, as it was for the Pauzhetka in its time, to equip it with the turbines of regular thermal electric power plants which are uneconomical in this instance?

Neither is everything favorable on Kamchatka with the non-electric utilization of thermal water. In the town of Paratunok, a suburb of Petropavlovsk-Kamchatskiy, a greenhouse combine has been heated by thermal water for fifteen years. Cucumbers and tomatoes do not grow on open soil in Kamchatka. But 2-3 harvests of vegetables a year are grown in the 6-hectare Paratunok Combine--20-22 kilograms per square meter. Since the combine entered service, its area has not increased and the field has not been exhausted. But the greenhouses began to be short of water, in connection with which a peak-load fuel-oil boiler was built.

The explanation for the "Paratunok Phenomenon" lies literally on the surface. The thermal lines were built in an unsystematic fashion and were monitored by no one. From time to time, enterprising residents of the town would make branch lines from the communal thermal lines, build their own little greenhouses and begin to grow vegetables. The profitability of this "initiative" can well be seen on the market: cucumbers--10 rubles, and tomatoes--15 rubles, a kilogram.

After all, the situation could be quite different in the oblast. Reserves in the amount of 23,000 cubic meters of 79-degree thermal waters a day were confirmed in the Verkhne-Paratunok field. This is, at a minimum, 6-8 hectares of greenhouses plus communal town heating supply for the combine employees. There are both a consumer and good roads here, but the matter stands still, although many speak and write about the creation of fish ponds heated by thermal water. It is calculated and elaborated, how many millions of small salmon could be grown and released into the rivers and the ocean. Discussions are conducted, but the cart is still standing there.

The large Bolshe-Bannoye field has been discovered 60 kilometers from Petropavlovsk-Kamchatskiy. Wells here brought 300 kilograms a second of steam and water mixture to the surface at a temperature of 170-180 degrees. The reserves here are confirmed by the USSR GKZ. Fifteen years ago, it was proposed that a 15-18,000-kilowatt geothermal electric power plant be built here. But even today the question has not been resolved of how better and more fully to utilize this field.

It is true that in the large bush of geothermal problems in Kamchatka, roses are encountered among the thorns. Several thermal-water swimming pools in Paratunok operate year-round--a place of pilgrimage not only for the residents of Petropavlovsk-Kamchatskiy, but for visitors as well. The chemical and gas



content of this water facilitates the effective treatment of a number of illnesses, in connection with which a balneological clinic has been equipped here. It is a comforting fact. But how little this is compared to that which could be given to the peninsula by the comprehensive utilization of the heat of the earth!

The question arises: why is the path to the development of the geothermal industry of Kamchatka so thorny? References are made to the difficulty of access to some geothermal fields and the difficult conditions of surveying and assimilating them with a shortage of equipment. All of this is true. But the main thing is that a general plan has not yet been developed for Kamchatka for the comprehensive utilization of the geothermal resources on which the planning and construction of facilities depends.

The study of geothermal conditions has no single "manager." After all, the USSR Ministry of the Gas Industry is responsible only for the production of thermal water or steam, and is not concerned with its further fate. Hence the "thorns" of developing the geothermal industry, which is promising but, alas, helpless.

As for Kamchatka, sooner or later its enormous reserves of underground heat will be assimilated. It would just be a shame if hundred-degree water is surveyed and produced in one part of the peninsula, and the same water is poured into the river in a broad stream in another part, in the future as well.

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11 July 1986

**ALTERNATE FUELS****HIGH TEMPERATURES INSTITUTE DIRECTOR ON LONG-RANGE PLANS****Moscow PLANOVYE KHOZYAYSTVO in Russian No 4, Apr 86 pp 11-12**

[Article by High-Temperatures Institute of the USSR Academy of Sciences Director Academician A. M. Cheyndlil: "The Resolutions of the 27th CPSU Congress--into Life: Congress Delegates Speak--Knowledge, Experience, Energy--Fulfilling the Resolutions of the Party Forum"]

[Text] Having heard the impressive Political Report of the CPSU Central Committee to the congress, delivered by M. S. Gorbachev, the report of N. I. Ryzhkov and the speeches of the delegates to the congress, I am reflecting on ways of developing the fuel and power complex of our country in accordance with the tasks of accelerating the social and economic development of the Soviet Union. The planning of scientific and technical progress has especial significance in this and, as noted in the Political Report, requires a bold transition to all-round planning. In my view, it should be based first and foremost on a well thought-out forecast of the development of this or that sector of industry and, in particular, such an important one as power engineering.

Forecasts of the development of power engineering, on the one hand, are developed on the basis of appropriate systematical analysis and data on the growth of national production and the development of the social aspects of public life. Such an important factor as the forecasting of growth in labor productivity in the future is taken into account in this.

On the other hand, a scientifically based forecast of the development of primary energy sources serves as a basis for forecasting the development of power engineering, particularly of the scale of oil, natural gas and coal production, the amount of nuclear power production etc.

In such forecasting, however, the prospects for the development of this or that power-engineering technology, as well as the efficiency increase factor of production as a result of the incorporation of scientific and technical achievements which change the corresponding technology of production, are poorly taken into account or not taken into account at all. An example of such an approach was the forecasts of the development of power engineering in the 1950s, when the scale of nuclear-power application was not taken into account in conducting long-term forecasting, notwithstanding the fact that the

first nuclear electric power plant in the world had already been built in our country.

A technique for forecasting the development of power engineering taking into account the achievements of scientific and technical progress in the creation of new, and the perfection of existing, technologies is the conducting of broad-scale conceptual planning of the corresponding new technology with variable capital, operational and other expenditures, taking into account prices at the time. As a result of the work of scientific, planning and design collectives, it is becoming workable, as it should be in forecasting (especially long-term), to determine the possibility and efficiency of the appearance of the corresponding new technology.

In our view, as applied to nuclear power and in speaking of its long-term forecasting, this should be done quite completely and according a unified technique first and foremost for the technologies:

- of electricity--prospective AESs, including possible thermonuclear installations of the hybrid and "clean" types, coal-fired magnetohydrodynamic electric power plants, high-temperature coal-fired steam-gas installations, the combustion of coal in a fluidized bed for major electric power plants, and prospective power-technology methods of producing electricity;
- of the fuel sector--thermal and physiochemical methods of increasing the extraction of oil, especially viscous, from strata, increasing the extent of petroleum refining, obtaining synthetic motor fuels from coal, as well as shale, and fundamental methods of coal enrichment;
- of energy conservation--improving heating and ventilation systems, the enclosure structures of buildings, and the creation of fundamentally new low- and high-temperature energy-conserving technologies in the chemical industry, metallurgy, the building-materials industry and in transportation installations.

The conducting of long-term forecasting research with a regard for what has been said will increase the reliability of forecasts and make it possible to determine the chief areas for creating new technologies that provide for the acceleration of scientific and technical progress in power engineering.

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## ALTERNATE FUELS

### BRIEFS

**WIND-POWERED WEATHER STATIONS**--A not only reliable, but very cheap source of energy has been obtained by the associates of the "Shakhristskiy Pass" mountain weather station in Tajikistan. Heat and light for their residences and electric-power supply for their scientific instruments is provided by the wind: the first wind-powered electric power plant in the republic has entered service here. Two or three such installations at the weather station supply full power for its work. A program for the utilization of wind installations at weather stations has been developed in the republic. Its implementation will make possible a sharp reduction in fuel requirements. That is very important here, insofar as fuel is transported principally by helicopter to many hard-to-reach places. [Text] [Moscow GOLOS RODINY in Russian No 51, Dec 85 p 3] 12821

**SOLAR-POWERED WATER HEATING**--Alma-Ata--In our time, the problem of power is considered a global one. Scientific research institutes are resolving the task of actively drawing renewable energy sources into the fuel and power equation: solar, wind, geothermal, biomass and others. At the Semipalatinskoblseiprojekt [Semipalatinsk Oblast Agricultural Planning] Institute, taking into account natural opportunities, an experimental version of a "Mansard Two-Unit Interlocking Residence with Apartments on Two Levels" solar-powered hot-water system has been developed. The system is distinguished from ordinary ones just by the use of autonomous water heaters--solar collectors. An accumulation tank with a coil and a working capacity of 400 liters of water is situated in the attic of each apartment. In the summer water, heating in the solar receptor, enters the upper part of the accumulation tank, where it is heated to preparedness for use. On overcast days it is heated in the usual manner. The utilization of solar power will permit a saving of fuel and energy resources, and in the future a considerable portion of the traditional energy sources in the communal-housing sector, agriculture and industrial production will be replaced. [By N. Leonova, engineer at KazSSR Gosstroy [State Committee for Construction] KazTsNTIS [Kazakhstan Scientific and Technical Information Center for Construction]] [Text] [Alma-Ata KAZAKHSTANSKAYA PRAVDA in Russian 4 Jan 86 p 3] 12821

**NEW THERMAL-WATER FIELD**--Mineralnyye Vody--Along with the drilling of exploratory wells, the practical assimilation of the recently discovered Kazminskoye Thermal-Water Field in the steppes of Stavropol is underway. The utilization of a geo-circulatory system that meets the requirements of a rational and thrifty relationship to nature is projected. [By IZVESTIYA correspondent V. Oliyanchuk] [Excerpt] [Moscow IZVESTIYA in Russian 25 Jan 86 p 2] 12821

## NUCLEAR POWER

### RECENT DEVELOPMENTS AT ATOMMASH NUCLEAR PARTS PLANT

#### Commentary on Atommash

Moscow GOLOS RODINY in Russian No 6, Feb 86 p 2

[Commentary: " 'Atommash' Matters "]

[Text] Mass production of all nuclear power plant equipment is the new step for the "Atommash" plant in Volgograd. To do this has required the start of construction on two new, powerful shops, one for interior equipment and the other for heat exchange equipment. That which was just recently considered a future enterprise has become a reality, thanks to the effort of workers, scientists, and construction workers of the All-Union Komsomol Shock Project. Completed ahead of time was an important point of the socialist obligation taken on by the atommash workers in honor of the 27th Party Congress.

Now "Atommash" produces 125 different articles. And the very first article was a reactor body which was built here ahead of schedule at the beginning of 1981, prior to the opening of the 26th Party Congress. Having brought this decision to life, "Atommash" has increased speed. During this time a large amount of construction and installation work has been accomplished, hundreds of thousands of square meters of production area has been delivered, and unique equipment has been set up. A 15-thousand ton press stamps out reactor bottoms from 60-ton white hot pieces; deep-drilling methods are used, as is vacuum-plasma cutting of friction-resistant coverings.

Simultaneous with the perfection of complex equipment there has been introduced a new building, and a collective was organized. The Atommash workers have taken upon themselves as a personal challenge a task which was established in the Project for Basic Directions for the Economic and Social Development of the Nation to deliver a capacity to generate up to 390 billion kilowatt-hours at nuclear plants before 1990. In essence the equipment for these new nuclear plants is being created in the shops of their enterprise.

In each of the upcoming years eight equipment sets for nuclear plants with capacity of one million kilowatts each will be built here. They will perfect fast-neutron reactors. Series production of reactors for nuclear heat and power plants has begun. The first of these is already erected in Gorkiy. The next will be in Voronezh.

"Atommash" is the backbone of nuclear power of the future.



Recaps of Articles Relating to Atommash

Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian 9, 16, 23, 30 Jan, 6, 13, 20 Feb, 14, 20, 28 Mar 86

[Article: "A Complex is Born" under the rubric "Sotsialisticheskaya Industriya at Atommash"]

[9 Jan 86 p 2]

[Text] A stand for thermal and hydraulic testing of equipment has been handed over at the Atommash plant, and it is being used. At the first power unit the construction workers have finished installation of three more low pressure stands, and are ready to hand over a high pressure stand. This was reported by the Chief Engineer of the Experimental Testing Detachment of the plant's Special Design Bureau, G. Belykh, in the article "A Complex is Born" in No. 2 (366) of "Sotsialisticheskaya Industriya at Atommash."

In "In Hopes of Perhaps" in this issue is published a letter from V. Navozov. The author directs the attention of the construction workers who are making premature decisions, at times damaging reliability and quality, as they race for plan indicators.

Equipping of the hospital complex is going extremely slowly in Volgodonsk. Items of finishing work on the project are carried over from year to year, and the construction organizations which lead the work are being slowed. The reasons for such a situation are analyzed in the article "From the Sick Head to the Healthy One" by A. Zorin.

Also in this issue are published an article from the Chief Metrologist of Atommash, V. Vorobyev, entitled "Among the 'Strong Ones'", and by a representative of the city club for artistic associations, Ye. Frolova, entitled "All the Muses are Visiting."

Continuing with the rubric "Man, Labor, Morale", the paper notes a letter from L. Shamardina entitled "A Game Without Rules."

[16 Jan 86 p 2]

[Article: "At the Beginning of the Five-Year Plan" under the rubric "Sotsialisticheskaya Industriya at Atommash."]

[Text] Contained in issue No 3 (367) of "Sotsialisticheskaya Industriya at Atommash" is information about the first successes of the leading crews of construction workers which have been achieved at the beginning of the Five-Year Plan. The "Promstroy-2 [Production Construction 2]" crew of metal workers headed by V. Kapanov is working at high speed. It is exceeding its tasking every day. Prepared for a solemn greeting to the 27th Party Congress through knowledge and highly productive labor, the crew of N. Donechko from the housing construction combine has been doing shock work since the first

days of January. The construction workers are obliged to deliver their project ahead of schedule.

Installation at Atommash of a complex for testing indicator systems for protection management systems has been completed. After metrological certification, all ten channels of the complex will be ready. This is reported in the article "After the Start" by the Chief of the Complex for Indicator Testing, A. Khil.

A construction and installation directorate was organized at Atommash seven years ago. In the intervening years there has been substantial growth in the volume of work which is completed by this organization. There are large tasks ahead of the construction workers in this new Five-Year Plan. However, a number of organizational shortcomings are significantly hampering business. I. Krakhmalnyy, the Chief of the Construction and Installation Directorate, writes about them in "Unwilling Deliveries".

Also in this issue is published a letter from Z. Bukinova entitled "A Linden Tree for the Ministry", and one by A. Zorin entitled "From Couch to Couch", and an article by the Chief of the Inspectorate of GosAtomStroyNadzor [the State Committee for Oversight of Nuclear Plant Construction], V. Nefedtsev, entitled "Gates -- to Flow", as well as letters from readers and answers to critical announcements.

Kuzma Volgodonskiy appears in the newspaper with a satirical article entitled "A Musical Pause."

[23 Jan 86 p 2]

[Article: "Working Acceleration" under the rubric "Sotsialisticheskaya Industriya at Atommash"]

[Text] The pre-Congress socialist competition has become wide-spread among the construction workers and operators at Atommash. In No 4 (368) of "Sotsialisticheskaya Industriya at Atommash" is published information about the obligations of the leading workers at the plant and the structures which they have taken on as shock work. A crew of the directorate for construction of mechanized work, a brigade of automated transporter operators headed by V. Dmitriyev decided to complete the two-month plan by the opening day of the 27th Party Congress. At "Grazhdanstroy [the Civil Construction Trust]", the crew headed by Ye. Tkachuk will be working on the second quarter's tasking during the time of the Congress.

The high quality of nuclear power equipment would be impossible today without the reliable metrological support of its production. In an article entitled "The Metrologists' Contribution", V. Noskov notes the high-quality technical results which were attained by the Chief Metrologist's Department and tells of the innovations of the innovators and inventors at Atommash whose work is now on display at the USSR VDNKh [Exposition of Achievements of the Economy].

An affiliate of "Gipropribor [the State Institute for the Planning of Instrument Plants]" has been established in Volgodonsk. The Affiliate Director, A. Frolov, in an article entitled "In the Hands Alone" acquaints the readers with the tasks and initial results of the activity of this new planning organization.

Continuing with the rubric "Quality is Everybody's Business", the paper published a letter from the Chief Engineer of the Atommash SMU [Construction and Installation Directorate], N. Tarasov, entitled "Shall We Build Strong or Repair Soon?"

Also published in the issue are letters from L. Shamarlina, "Shame", and from A. Zorin, "How the Problem Happened", and an article from the Chairman of the Shop Committee from the Planning Department of Atommash, A. Zemskova, entitled "A Sincere Man", and an economic chronicle.

The paper has placed a letter to Kuzma Volgodonskiy under the heading "A Surplus Unit". It was written by the Chief of the Carpenter Shop of "Grazhdanstroy", V. Khochin.

[30 Jan 86 p.2]

[Article: "The Course is Acceleration" under the rubric "Sotsialisticheskaya Industriya at Atommash"]

[Text] Under this heading in No 5 (369) of "Sotsialisticheskaya Industriya at Atommash" are published the socialist obligations of a collective from the "Atommash" Production Association for 1986. It was decided ahead of time, on December 30th, to complete the plan for basic technical and economic indicators and to exceed the task for growth in productivity of labor by 0.7 percent.

Among other points in the socialist obligations for the Atommash workers, they are to equip the Chernobylskaya AES [Nuclear Power Plant] one month ahead of schedule and are to provide simultaneous delivery of equipment to other nuclear plants.

This year the Atommash workers are continuing their socialist competitions with the collectives of the "Izhorskiy Plant" Production Association, the Kramatorskiy "Energomashspetsstal [Power Machinery Special Steel]" Plant, the Podolskiy Machine-Building Plant imeni Ordzhonikidze, and the Volgodonskiy chemical plants.

The workers of the "Atommash" Production Association have assured the CPSU Central Committee that they will with pride complete their socialist obligations and will greet the 27th Party Congress in a fitting way.

The paper publishes material under the rubric "A Pre-Congress Look at Reserves". Chiefs of sections of the building equipment shop, A. Rebrovskiy and V. Sklyar, appear with an article entitled "How is Experience Distributed?" What is the use of establishing through-contract schools [shkoly skvoznogo podryada] in the "Volgodonskenergostroy [Volgodonsk Power



Construction]" Trust? This question is answered by a letter from A. Zorin entitled "Teachers and Pupils."

The paper has placed a letter from L. Shamardina entitled "Pose and Position" under the rubric "Man, Labor, Morale".

[6 Feb 86 p 2]

[Article: "Goals of the Construction Workers" under the rubric "Sotsialisticheskaya Industriya at Atommash"]

[Text] Issue No 6 (370) of "Sotsialisticheskaya Industriya at Atommash" has come out. In it are published socialist obligations for the collective of the "Volgodonskenergostroy" Trust for 1986.

The main task for the working collectives of the subunits of the "Volgodonskenergostroy" trust are the introduction of a number of very important projects intended for production at Atommash. During the year they propose to complete 3.6 million rubles worth of housing construction.

At the "Atommash" Production Association and at the "Volgodonskenergostroy" Trust there have been meetings of the party and economic activists. Under the rubric "A Pre-Congress Look at Reserves" the paper has published calculations from the meetings of the operators and construction workers.

"Other Rejects" -- under this heading in the issue is published a letter from Z. Bibikov. Its author writes about large losses which were brought about by a two-year old numbers-padding which was allowed to occur at Atommash, and she lists the reasons which gave rise to this negative phenomenon.

Also published in the issue is correspondence from A. Zorin entitled "The Gasoline River", and answers to criticisms, and an economic chronicle.

Kuzma Volgodonskiy presents the readers with the humorous "The Leadership's Secret". The paper also contains news of culture and everyday life.

[13 Feb 86 p 2]

[Article: "So We Can Work Better" under the rubric "Sotsialisticheskaya Industriya at Atommash"]

[Text] The Komsomol Youth Brigade headed by A. Nagibin has come up with a valuable initiative at the "Yuzhtekhmontazh [Southern Equipment Installation] Directorate. This leading collective has decided to complete the plan for the first year of the Five-Year Plan by November 7th, as is reported in No 7 (371) issue of "Sotsialisticheskaya Industriya at Atommash". In an article entitled "The Standard is ONE and One-Half Standards", the Secretary of the Komsomol organization of the USSR Minmontazhspetsstroy [Ministry of Installation and



Special Construction] in Volgodonsk, S. Berezkin, tells of the work of this leading collective during February. Each day, having compiled the totals for the shift, the construction workers note with glee, "It is one and one-half times the standard," reports the author.

With the intent of further modernization of the economic mechanism in the "Volgodonskenergostroy" Trust, there has been a reorganization of individual construction subunits. Under the heading "To Work Better", the paper publishes an interview with the Deputy Chief of the Trust for Economics, V. Gritsay, who analyzes the structural changes which are taking place.

There is less and less time until the important event for our nation, the opening of the 27th Party Congress. These days "Sotsialisticheskaya Industriya at Atomash" receives letters from constructions workers and operators in which they with great interest evaluate the plans for further modernization of production and acceleration of the tempos of construction and installation work. Continuing under the rubric "A Pre-Congress Look at Reserves", the paper publishes a part of these letters.

Also in the issue is correspondence from A. Zorin entitled "Kept Secret from the Collective", an article by a professional worker of "Spetsstroy-1" A. Ponomarev entitled "Drills According to Schedule", answers to criticisms, and an economic chronicle.

Kuzma Volgodonskiy appears with a humorous piece "A Prize for a Reprimand". The newspaper presents news of culture, everyday life, and sports news.

[20 Feb 86 p 2]

[Article: "Working Honor" under the rubric "Sotsialisticheskaya Industriya at Atomash"]

[Text] A Deputy of the USSR Supreme Soviet, Crew Chief at "Grazhdanstroy" Ye. V. Kolabekova has been elected as a delegate to the 27th Party Congress. In issue No 8 (372) of "Sotsialisticheskaya Industriya at Atomash" under the headline "Working Honor" is published a sketch of this leading construction worker by S. Antonov.

Also published in the issue are material under the rubric "A Pre-Congress Look at Reserves." This year, a collective from Shop 157 of "Atomash" has almost double its output. How, due to what will they complete the complete output, the high productivity of labor at each work place? This question is answered in the articles entitled "Do Not Fear Restructuring", by the Secretary of the Shop Party Bureau, V. Logvinenko. Here also is correspondence from V. Navozov entitled "Who Dropped the Relay Baton?".

"Fools' Gold" is the title of correspondence from A. Zorin in the paper. It expressed doubt that as a lagging collective which has not completed its 1985 obligations, they can be "mac" leaders at Volgodonsk. An incident with "Zavodstroy" shows clearly that exaggeration of achievements and hushing up

shortcomings are as before characteristic for the style of work of many economic and party leaders, the author notes.

Kuzma Volgodonskiy entertains the readers with the humorous "For Service Use."

[14 Mar 86 p 2]

[Article: "Party Plans Brought to Life" under the rubric "Sotsialisticheskaya Industriya at Atommash"]

[Text] Under this headline in issue No. 11 (375) of "Sotsialisticheskaya Industriya at Atommash" was published information of the working success of construction workers and operators. Inspired by the historic decisions of the 27th Party Congress, the leading collectives of the "Construction Department" intend to complete one-third of their task for the year during the first quarter and are reliably working toward that goal. Now the crews of K. Kondtarev and I. Manuylov are working on their May tasks. Having completed the plan for the first two months before the opening of the 27th Party Congress, the installers of SMU-9 [Construction and Installation Directorate Number Nine] are continuing to increase their speed.

The newspaper published an article by the Chief of the Design Department for Future Units at Atommash V. Kushnarev. It was entitled "From 'Tokamak' to 'Uragan'." Looking at the future of tomorrow's nuclear power, the author writes of the great capacity of the association's collective for turning scientific ideas into production.

"Sotsialisticheskaya Industriya at Atommash" has written several times about the shameful practice of padding numbers [pripiiska] which is prevalent at enterprises. Returning to this theme, the paper has published correspondence from Z. Bibikova entitled "The Matter of Two Million." The author writes about the continuing occurrences at the enterprise of distortions in book-keeping and the acceptance of eyewash, against which no strong measures were taken.

In the issue also are published articles from the Chief Metrologist V. Vorobyev entitled "Not by Form, but by Substance", and by the Chief of the Supply Management Shop for Atommash G. Popov entitled "Remember Working Honor", and by Correspondent A. Zornin entitled "Circles of Fibers", answers to critical announcements and an economic timetable.

Kuzma Volgodonskiy presents the readers with the humorous "Whom to Fear."

[20 Mar 86 p 2]

[Article: "With an Accelerating Course" under the rubric "Sotsialisticheskaya Industriya at Atommash"]

[Text] An enormous volume of work was assigned to the builders and users of Atomash in the historic decisions of the 27th Party Congress. In No. 12 (376) of "Sotsialisticheskaya Industriya at Atomash" there is a report on the work of the foremost collectives in March. Shock work is being done by the Directorate for Mechanical Work Number 1, which is substantially exceeding the schedule for automated scraper operators and excavator operators.

A crew from the Volgodonsk detachment of "Yuzhstalkonstruktsiya [the Southern Steel Construction Trust]" has decided that by the end of this year it will have installed the roofs on five of the six spans of the fifth building of Atomash. But there is some danger that these plans will not be realized. As the Chief Engineer of the Directorate E. Chikinev notes in the article "The Method is Old; the Mistakes are New", the construction workers continue to work at cross purposes. The Krasnosulinskiy Plant for Metal Structural Members is delivering an incomplete product. The Production Directorate for Capital Construction [PromUKS] at Atomash has not yet issued all the blueprints for installation of roofing. SMU-16 [Construction and Installation Directorate 16] of Zavodstroy [Plant Construction Trust] also is not showing much activity, and is holding back hand over of the foundations.

A year ago in Volgodonsk a decision was made to improve the finishing of the facades in housing units. Why has this not been done? This question was asked in the article "Gray Houses", and examined by the Deputy Chief Engineer of the KPD-210 [Large-Panel Housing Construction] Plant A. Sukhanov.

In this issue there are also published articles from a crew chief of metal workers and fitters N. Tishchenko, "It is Not Noted in the Order", and by A. Berezhnyy, "The Archaeologist from Zavodstroy."

The newspaper will acquaint the readers with news of culture and everyday life.

[28 Mar 86 p 2]

[Article: "According to the Upcoming Plan" under the rubric "Sotsialisticheskaya Industriya at Atomash"]

[Text] This year there are large tasks confronting the "Zavodstroy" collective, which has to introduce six new complexes at Atomash. Now doing shock work here are construction workers from SMU-9. Examples of their communist attitude toward labor are shown by the crew of Ya. Kezhvatov. First place in the competition belongs to the crew of Ya. Noviselov, as is reported in issue No 13 (377) of "Sotsialisticheskaya Industriya at Atomash".

High production marks were also received in march by the collective from the reenforced concrete articles plant. Having successfully completed their pre-Congress socialist obligations, the plant workers accepted the upcoming plan, and decided that this year they would produce supplementary production worth 390 thousand rubles.



At Atomash there was a meeting of the branch council of chief designers for systems of automated planning (SAPR). How this system is associated is described in the article "SAPR: Steps Ahead" by T. Makarov.

"Having Joined Forces" is the title of an article in this issue by the Secretary of the Volgodonsk CPSU City Committee A. Abramova, in which questions are posed about the improvement of organization of services to the city's inhabitants.

For three years now, the "Promstroy-1 [Industrial Construction-1] collective has been working according to the method of the Vinnitsa construction workers, but this progressive experiment, which has received all-union recognition, has not become widespread at Volgodonsk. The paper publishes correspondence from A. Zorin entitled "The Fate of the Experiment", in which the reasons for such a situation are analyzed.

Also in the issue are an article by A. Popovich, "The Second Shift", answers to criticism, and an economic chronicle.

Under the heading "Who Sings About Stoves" is published the collected letters from readers to Kuzma Volgodonskiy.

#### Atomash Delivery Schedules

Moscow SELSKAYA ZHIZN in Russian 20 Feb 86 p 1

[Article by Yu. Maksimenko: "Special Work for the Peaceful Atom"]

[Text] Volgodonsk -- During the pre-Congress special work the collectives of the crews, shifts, and sections of the "Atomash" Production Association imeni L. I. Brezhnev are attaining high labor productivity, and are improving the use of machines, units, and equipment.

There is strengthening in the socialist competition for rapid completion of production capacities, and for successful completion of the tasks of the first year of the new Five-Year Plan for output of equipment for nuclear power plants.

Beginning this year, "Atomash" is starting to deliver equipment for the fast-neutron reactor unit at the South Ukrainskaya AES. During the years of the 12th Five-Year Plan production of equipment for nuclear power plants will be significantly increased. It will be delivered to the Rostovskaya, Krymskaya, Zaporozhskaya, and other AES's.

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## NUCLEAR POWER

### USING AES THERMAL WASTES FOR BIOLOGICAL COMPLEXES

Vilnius SOVETSKAYA LITVA in Russian 16 Apr 86 p 4

[Article by S. Borisova, Novosti correspondent: "Worthy of Note: AES and Energobiology"]

[Text] What does a nuclear power plant do? That seems to be an idle question: we all know that it generates electrical power but its capabilities are not limited to that alone. In this case we are talking about unusual power and biological complexes. Novosti Correspondent S. Borisova tells about an interesting experiment to utilize the coolant water from the Kursk Nuclear Power Plant [AES].

A fish-breeding center will soon appear on the long dam that divides the Kursk AES cooling pond. The first stage of its construction will soon be finished. Using warm water from the power plant, this center will produce 2000 tons of marketable fish per year.

Fish are hatched and cultivated at many cooling ponds of power plants and other industrial establishments. However, the difference between this hatchery and all others is that it will operate according to a polycyclical scheme. In normal hatcheries, a seasonal technology, the so-called single cycle, is used: the fingerlings are hatched in the spring and by autumn, marketable fish are ready. At this new hatchery, the fish will be grown on a year-round basis which makes it a much more productive establishment.

The fish-breeding center at the Kursk AES is a unique facility at which new ideas about the utilization of power plant cooling water will be put into practice.

For cooling purposes, the generating equipment at an electrical power plant consumes 50 cubic meters every second per 100 megawatts of generated power. All of this water is then returned to a cooling pond and this leads to thermal pollution of the environment.

The temperature is raised in natural lakes and this lowers the normal oxygen content which sharply alters the usual environment for the marketable fish found in these waters. These fish are "depressed" or even killed if the temperature exceeds a certain threshold. This also encourages the growth of certain bacteria and causes dramatic algae blooms. For that reason, our country has passed laws restricting the temperature increase in natural lakes.

The cooling ponds at electrical power plants are supposed to protect the natural environment. At the same time they can be used for fish breeding and are stocked with herbivorous fish such as [belyi amur] and [tolstolobik] which grow quickly in warm water and cleanse the lake of its algae.

The other element in the scheme is low-potential greenhouses for vegetables which will be heated by cooling water at a temperature of 20-30° C. The leafy tops of harvested vegetables can be used as a vitamin supplement to fish feed.

Costly structures will not be required to build the greenhouses because warm water will be pumped directly onto the roof and then sprayed over the plants to keep them warm. Various designs for these greenhouses have been produced and they include both vertical and graduating tower models. The first design is advantageous because it takes up little space while the second one produces vegetables while cooling the water it uses. The costs for construction of these designs is 30-40 percent lower than for ordinary greenhouses but the chief advantage is that their operation involves no fuel costs at all. These greenhouses will also include mushroom cellars which can produce an annual yield of 500 tons of mushrooms from 0.5 hectares! The technological cycle is then closed by a microbiological plant that converts fish-breeding and agricultural wastes into valuable nutritional yeasts, enzymes and other preparations.

This will be the first waste-free energobiological complex at the Kursk AES. It has already begun limited operation: the first hectares of greenhouse space are being used to provide the employees of the Kursk AES with vegetables and fresh greens.

From the editors. The prospects for large-scale utilization of warm water from the Ignalinskaya Nuclear Power Plant have been described in one of the issues of PULS NAUKI [Pulse of Science]. The author of this article, Candidate of Biological Sciences Yu. Virbitskas, wrote that "it would be feasible to use the warm coolant water from the Ignalinskaya AES to create a special fish-breeding center". His article discusses the need during construction of that plant's second stage to build special lines that can provide warm water to the future fish-breeding center during the winter.

"The feasibility of using warm water from the Ignalinskaya AES for fish-breeding and cultivation purposes," writes Yu. Virbitskas in conclusion, "is an urgent necessity. The quicker this problem is solved, the better, and if it is practically resolved, it will help to successfully fulfill the tasks assigned by the Production program.

Our published article about the experiment to use warm water from the Kursk AES is a clear example of the economic and assiduous use of energy resources and is still one more example of the creation of a unified energobiological process with waste-free technology.

We were interested in learning from Yu. Virbitskas whether something is being done at the Ignalinskaya AES to implement these ideas. His answer was unfortunately unencouraging. We would like the responsible organizations to tell us why.

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NUCLEAR POWER

PLANS FOR SIXTH REACTOR AT NOVORONEZH AES

Moscow PRAVDA in Russian 23 Mar 86 p 1

[Article by Pravda Correspondent A. Starukhin: "A Match for the Plant" under the rubric: "The Eve of the Event"]

[Text] Voronezhskaya Oblast -- Above the almost 80 meter tall cone of reactors near the Don River there is the blue spring sky. In the heat water reservoir of the station there are carp swimming. It is the best medium for them to be kept, and they lack for nothing. The yet unmelted snow is white all around, only emphasizing the sterile cleanliness of the space here.

Today there are the ordinary sounds of a nuclear power station. It is almost like a plant, like any common factory. And time contributes to this. The Novoronezhskaya AES will soon be 22 years old. At first there was a power unit with 210 megawatt capacity, and it was unusual, like a "giant". Over the years the nuclear "draft horse" has been supplemented by three units, and the latter were almost twice as powerful. Finally, the fifth unit, the "millionaire" has put the prior performance of its ancestors to shame.

This does not mean, certainly, that the older equipment will be retired immediately. Recently, for example, the first unit underwent a complete inspection, with the participation of scientists and designers. Their conclusion was that after reconstruction it will still be usable. And now the nuclear "storms" have abated in it somewhat, and it is time for capital repair.

The crew of the station is the winner in the All-Union Socialist Competition. Since the first of the year it has produced almost one and one-half times as much power as has been seen before.

This nuclear plant has long been a school for leading experience, and cadres for other plants are trained here. In the last Five-Year Plan alone, the Novoronezhskaya AES provided training and practice for 2,200 specialists.

The task facing the station's crew is not easy. Reconstruction of the first power unit will take more than a year. But they are already preparing the technical basis at the site of the regular, the sixth "millionaire" reactor.

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## NUCLEAR POWER

### BALAKOVO PLANT DESIGNER ON EXPEDITING AES CONSTRUCTION

Moscow STROITELNAYA GAZETA in Russian 23 Mar 86 p 2

[Article by Yu. Kovrigin, Chief Engineer of the Organization for Planning Equipment and Construction for the Balakovskaya AES: "Conveyer for the 'Millionaire': How to Equip an AES More Quickly" under the rubric: "Under the Heading of New Directions"]

[Text] Saratovskaya Oblast -- The 12th Five Year Plan contains provisions for intensive development of nuclear power. In particular, there are provisions for significant acceleration of the construction of nuclear power plants, particularly in the European part of the country, and increasing the return on investments.

This direction, provided for in the USSR Power Program and also in the Combined Program for Scientific and Technical Progress of the Country and CMEA Members, was confirmed in the Resolutions of the 27th Party Congress as one of our basic power programs.

The basic directions provide for construction of a series of nuclear power plants which are intended to be partially or completely brought on stream during the 12th Five Year Plan.

The first of these to be equipped are the Zaporozhskaya and Balakovskaya AES. It is intended that the technology of rapid construction of the mass-production AES is to be developed. But the 12th Five Year Plan has begun, and there are still disagreements about what this rapid technology is supposed to be.

I note that the project for construction organization here provides for the technology of erecting the reactor section, the most complex and labor intensive installation. And here it is very important to select the correct lifting mechanism to use at the construction site.

At the Zaporozhskaya AES this was an imported crane. Using it, they installed previously assembled structural members weighing up to 240 tons. Therefore the heaviest equipment was installed only after the reactor section was "closed" by the working, the "polar" crane which was set up there. This equipment is quite complex and labor intensive, and demands large expenditures of time.

Principles for other equipment to be used at the Balakovskaya AES were developed by the Kuybyshev Affiliate of Orgenergostroy [the All-Union Institute for the Planning of Electric Power Projects] working with the engineering service of the general contractor, Saratovgesstroy [the Saratov Power Plant Construction Trust]. It suggests erecting an industrial installation conveyor when the pressure chamber of the reaction section is built. Such a capability exists if it is equipped with a K2x190 gantry crane, a domestically-produced product with 380 ton lifting capacity. An assembly and prefabrication installation zone is also equipped with a self-propelled platform conductor "plaza", on which are prepared units of metal structural members for the pressure chamber. They are ready for installation in the plant and weigh 300-380 tons. They are assembled in layers (on marks), and have an overall mass of 1,000-1,500 tons on the plazas, and then are placed on the reactor section installation zone in a special way, and there they are set into place by a gantry crane.

Unfortunately, the crane arrived too late, and they did not manage to set up the conveyor at the first power unit. But nevertheless its use has allowed them to save six months. Using it, they have completed 70 percent of the most labor-intensive work.

Thanks to the conveyor and the gantry crane at the second power unit building the support panel was installed and concreted in from mark 10.8 to mark 13.2 in three months (whereas on the first power unit, this took up to 13 months).

According to calculations, the industrial installation conveyor can double the rate of erection of the pressure chamber, as installation of all the technical equipment in the complex can be done in one year rather than two. During this the number of installed units is decreased from 388 to 47, and the length of welded piles which are installed at altitude are 2.4 times less. The productivity of labor on the pressure vessel increases by 14-16 percent, and that expended directly on installation is 3.7 times greater. Instead of 400 workers under the previous system of organization, now there are 300.

The experience in construction of the Balakovskaya AES, where the "K2x190" industrial installation conveyor was used, allows us to conclude that simply due to the use of this high weight capacity equipment there will have to be developed a standard rapid technology for further assembly of mass-produced AES's.

Nevertheless the scientific and technical council of the USSR Minenergo [Ministry of Power and Electrification] has for some reason recommended the purchase of imported cranes to be used in construction of the Bashkirsкая, Tatarskaya, and Rostovskaya AES's.

Why is it that, since those which have the capacity of the "K2x190" are twice as expensive, and they cannot be used to conduct the combined schedule of unit installation of heavy, large-capacity technical equipment for the reactor unit?

As early as 1980 the idea of setting up high capacity gantry cranes for AES construction was approved by the technical council of Minenergo. Then the support in the Ministry cooled, and the first "K2x190" crane was produced by the Zaporozhskiy Electro-Mechanical Plant according to blueprints furnished by

the Kharkovskiy Energomontazhproyekt only because of the persistence of the Balakovo nuclear installers. Then its lifting capacity was increased up to 400 tons. But now the plans for the crane are gathering dust in the archives.

There have been references to the fact that the specific expenditures for using "K2x190" cranes are higher than those of the "SKR" crane. But in the first place, this indicator is not better when the equipment is imported, and secondly, one must judge economy in terms of the final results. And the accounts show that the proposed decisions to organize rapid construction of an AES cannot exist without use of the "K2x190", and these would save hundreds of millions of rubles.

They say that the 400-ton crane is uneconomical for loads weighing up to ten tons, and there are more than 25,000 of these at the construction site of an AES. Well, that's true. However, in Balakovo we lifted these primarily using lesser-capacity cranes.

There is another way out of this -- we have to find, through decisive reevaluation of plans, whether it would be possible to assemble the reactor section in the old way out of small concrete panels and unit boxes, and combine their design so that they could then be installed in large units.

The root imbalances in design decisions are set out in the fact that during analysis of the project for one or another enterprise or industrial complex there is attention paid to the basic indicators which characterize the economic effectiveness of future production. The effectiveness of this organization of production is essentially unevaluated. It is not surprising that the general designer is not interested in modernization of construction methods, and its industrialization.

At the 27th Party Congress there was talk of the necessity for accelerating the construction of nuclear power plants, and combining at the planning stage the construction and the provision of financing. This is certainly correct. But it is very important also, in my opinion, to organize construction more effectively, and to use internal reserves. And these, as is seen by the experience of the Balakovskaya AES construction, are still large.

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## **NUCLEAR POWER**

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### **CONSTRUCTION OF MODEL BALAKOVO AES RECOUNTED**

Moscow PROMYSHLENNOYE STROITELSTVO in Russian No 4, Apr 86 pp 9-11

[Article by I. M. Shandalov, engineer of the TsNIIOMTP of USSR Gosstroy, and Y.K. Kovrigin, engineer of Orgenergostroy: "Model Construction Projects: Successes and Problems of the Saratovgesstroy Construction Bureau"]

[Text] The basic directions for the economic and social development of the USSR require a considerable increase in the generation of electrical power by nuclear power plants. This is only possible through a fundamental improvement of the systems used to control their construction and the utilization of both domestic and foreign advanced experience. However, experience can only be considered advanced when completely new ideas are introduced to workers who are constantly encouraged to use the achievements of scientific and technical progress.

January 1986 was the 30th anniversary of the founding of the Saratovgesstroy [Saratov State Power Plant Construction] Construction Bureau. This organization, under the leadership of its experienced and energetic director, A.I. Maksakov, has built 75 major industrial facilities including the Saratov GES [State Electrical Power Plant], Khimvolokno which is the largest production association in Europe and the Saratov irrigation canal. It was the efforts of the employees of Saratovgesstroy that built in a very short time the large modern city of Balakovo with over 200,000 inhabitants. For its successes in developing the industry and power network of the Volga region, Saratovgesstroy received the Lenin Medal in 1972.

When Minenergo USSR (and other construction ministries) faced the question of assigning model construction projects and construction subdivisions, its choice fell among other on Saratovgesstroy and the second stage of the Balakovo Nuclear Power Plant.

The first stage of the four-unit one-million kW Balakovo Nuclear Power Plant was a new chapter in the activities of Saratovgesstroy. The first cubic meter of concrete for the floor plate of the reactor section in the plant's main



unit was laid in December 1980. After 5 years of hard work, there are problems that have been solved and others that still await an answer.

From the very start of construction, the party organization within the various subdivisions initiated a socialist competition to ensure high construction quality for the plant and a shorter completion time. A comprehensive system for controlling the efficiency of major construction was developed and introduced. The chief concept in this system was the improvement of work organization through better engineer training. Furthermore, the system also stipulated an increase in the level of comprehensive mechanization of construction work by improving the structure of machinery and transportation resources and equipping subdivisions with items of small-scale mechanization and standardized equipment.

In the construction of the Balakovo GES, Saratovgesstroy has devoted a great deal of attention to expanding its production base and the manufacture of building structures that can raise the level of industrialization. In comparison to 1980, industrialization of the construction work did increase by 18 percent to a present level of 78 percent for housing construction (and 89 percent for industrial construction). Along with this, existing factories need technical re-equipment since a considerable portion of their equipment has been in use for over 20 years.

The use of more highly-finished structures has made it possible to cut the amount of masonry work in half and to reduce by one-third the amount of one-piece concrete structures and ferroconcrete. The new technology for preparing concrete mixes and solutions with an installation that activates large amounts of water within a magnetic field has reduced cement consumption by 7 percent. Technology for the use of cement dust as a binding agent in the preparation of solution mixtures has been mastered and this has also conserved a great deal of cement. Industrialization of the construction of the generating units has made it possible to achieve a substantial reduction in labor costs through the use of prefabricated one-piece structures for the walls in the reactor sections, block-girders in the main building, hermetic enclosures for the reactor room, reinforced cores and unit cells and ready-to-use wall panels.

The construction of the plant's first unit gave interesting results that are worth discussing in greater detail. As we know, the reactor section is the most complex and time-consuming part of nuclear power plant construction and its completion is what determines how soon the plant will be able to go on line. Unit One of the Balakovo Nuclear Power Plant saw the introduction of an experimental technology and special equipment for the large-unit assembly of building structures and heavy equipment through the use of a K2 x 190 380-ton travelling gantry. Analysis of the operating parameters of the construction cranes presently produced by Soviet indicated the necessity of developing such a gantry, which was then designed by the Kharkov Division of the Energomontazhproyekt Institute and manufactured for Saratovgesstroy by a factory in Zaporozhe. Traditional cranes do not have a lift capacity exceeding 75-100 tons and this made it impossible to introduce an efficient

variant for mechanizing the large-unit assembly of the reactor room in the series-construction of 1000-MW nuclear power plants. The effects of large-unit assembly can only be seen once the assembly of amalgamated 200-400 ton units is under way. It must be pointed out that the introduction of the K2 x 190 travelling gantry has made it possible to conduct a broad front of construction and assembly work with all of the basic structural elements such as the enclosure, the protective jacket and the air-tight interior space. This makes it possible to combine the assembly of the metal reinforcing structures of the air-tight interior with the largest possible units of up to 380 tons with the installation of the technological equipment. Furthermore, since the work of setting the reactor and steam generators into their intended positions is now done by the travelling crane-manipulator, the labor-intensive work within the air-tight interior can now be done under more organized conditions and this helps to reduce the work completion time.

The assembly of the reinforced metal structures of the air-tight zone is speeded up by preliminarily amalgamating these structures at special assembly sites. The readied units are then taken to the assembly zone on mobile mold jigs and are put together "from the wheels". This creates a mobile assembly conveyer which makes it possible to reduce the amount of high-altitude work by about 20,000 man-days at one reactor alone and cuts assembly time in half to a total of 6 months. However, it must be added that the technology developed for large-unit construction of Unit One was realized only in part due to the late delivery of the travelling gantry crane. Even with the relatively low amount of construction and assembly work done using the new technology, its advantages are obvious. In 7 months of 1984 (from the introduction of the K2 x 190 gantry in February 1984 to the assembly of the reactor dome in August 1984), the erection of the air-tight zone and installation of the heavy equipment was practically complete. The short time in which the gantry has been in use has not been enough to definitively evaluate the new technology but this gantry can be recommended for use as an assembly mechanism for rapid construction of reactors using the new technology of combining equipment assembly with large-volume assembly of special structures. At Unit One, the development and beginning use of the new technology already made it possible within 5 months to reduce to one year the two-year lag in construction. The normal completion time for Unit One of a generator with VVER-1000 reactors installed according to construction norm SN 440-79 is 48 months and the Balakovo plant did not complete its work on its Unit One within this period. This was due to a delay in the introduction of the new technology for large-unit assembly and combined assembly work using the K2 x 190 gantry and the tardy delivery of construction materials, structures and equipment to the site. Therefore, with a standard equipment assembly completion time of 34 months, it is necessary to start delivering the equipment 3.5 years before the scheduled start-up. These schedules can only be sustained if the proper safety equipment is delivered. The technological equipment for the reactor is delivered within 2-2.5 years which leads to irregular work schedules for the assembly organizations and does not permit combined assembly of large equipment as the construction of the reactor section proceeds.

Saratovgesstroy's specialists feel that, considering the complex nature of introducing a new technology and the objective difficulties encountered in the provision of materials and equipment, the existing standard completion time of 48 months should be seen as a progressive norm and must be adhered to for all nuclear power plants with VVER-1000 reactors that will be built by 1990. In addition, since the mechanization scheme has a direct influence over how long it takes to build the generating units, then the required time for completion of the basic construction work on the reactor section can be logically established by comparative analysis of various mechanization schemes. It would therefore be advisable to consider the experience in building reactor units at the Zaporozhe Nuclear Power Plant using a crane manufactured by Kroll, the Balakovo plant using the K2 x 190 (with special consideration of the previous assembly work on Units Two and Three) as well as the units at plants that did not have cranes for moving special high-weight loads. The criteria for evaluation of should be complex in nature and consider the costs of the work.

Saratovgesstroy and the Kuybyshev filial of the Orgenergostroy technological institute are presently working on proposals to improve the design of series nuclear power plants with VVER-1000 reactors by streamlining as much as possible the assembly of the building structures, liquidating the large number of small levers and changing assembly joints to direct bolt connection and welding without connecting elements. Preliminary analysis has shown that the use of the special 380-ton gantry crane and manipulator makes it possible to reduce by 1.5-2 times the amount of time needed to build the reactors and reduce the standard completion time for construction of nuclear power plants with million-kilowatt reactors to three years. The enormous potential offered by this technological is a serious argument in favor of the present new ideas.

There are many instructive aspects in the Saratovgesstroy's experience and in other areas such as the introduction of small-scale mechanization and efficient use of technical potential. The organization even has a special central section that provides various types of machinery to its users, a centralized glass and linoleum cutting shop and a section for preparing paints and putties and for drilling holes in concrete.

Saratovgesstroy has practically stopped laying concrete with tubs. The use of concrete-laying equipment ("Stetter" concrete pumps, "super-swingers" and "crawler-cranes" [kriper-krany]) has fully mechanized the laying of monolithic concrete. In 1984, the labor costs for this type of work amounted to 3542 man-days. Over 1984 and 1985, the mechanization of work freed 192 men and the specific amount of work done manually was reduced to 26 percent. The pay-back per ruble of work costs in 1985 went up by 12.3 percent of the 1981 figure. The construction workers at this site were twice awarded the Red Banner of the CPSU Central Committee, Council of Ministers, National Central Trade Union Council and the Komsomol Central Committee for their successes in national socialist competitions. For high quality in their construction and assembly work, Gosstroy USSR has awarded Saratovgesstroy its first class diploma for four years in a row.



Thus, the successes are all on hand. However, it is no coincidence that at the start of this article, we talked about some unsolved problems. It must be said that the efforts of Saratovgesstroy alone are far from enough to resolve them. It is only fair to say that not all of the factors that affect the work of this organization have their roots in the soil of the Volga region. One is reminded of V.I. Lenin's famous words: "Whoever tries to solve specific problems without having first resolved the general ones inevitably and unknowingly stumble across them at every step of the way"\*. Let us try to define these general problems.

According to its approximate status as a model construction organization with the approval of Gosstroy USSR, Saratovgesstroy prepared in February 1985 organizational and technical measures for bringing the construction bureau up to the model level. These measures were a strategy for growth of the organization's collective which it above all plans to attain through the use of scientific and technical advances. A year has passed but the measures had still not been reviewed at Minenergo USSR. To the present day, that ministry still has not prepared a "Position on model construction and assembly organizations (sites)" which could outline goals, tasks and means of achieving model status, define the relationship to other subdivisions of the ministry, clients and to design, technological and supply organizations. Not a single meeting of the Minenergo collegium has considered the problem how organizational and technical measures are to be carried out. There have also been complaints about some of the production and economic indicators used to determine which organizations receive model status. Thus, for paces of growth in labor productivity and quality of construction and assembly work, it is only necessary to exceed the average figures for the other ministry subdivisions. This is very little for the workers that are supposed to set an example for their colleagues in the industry.

The construction of the Balakovo Nuclear Power Plant has violated basic directions for "approximate status as a model construction site". In particular, Saratovgesstroy has not received in the required order any limits on capital investments as strictly defined by standards on construction work completion time and is also not receiving (as we have already said) its technological equipment according to the calendar plan for a model construction site. In connection with the 1984 decision to build the second stage of the Balakovo plant, Minenergo USSR considered it necessary to include this very stage in its list of model construction projects. This presented the favorable possibility of going into work on the new unit with completely new limits. However, the design and budget documentation for the second stage of the plant has still not been released (according to the standard schedules, this should have been done by 1 July 1985). This has therefore disrupted the principle of line construction and has unjustifiably reduced the time allotted to complete the unit. Thus, at the present time (5-6 years before the stage II units have to be started up), it is now certain that the schedule for starting up the units of stage II will be disrupted. Under these conditions,

\*Lenin, V.I., Complete Collected Works, Vol 15, p 368.



it was a great help for Saratovgesstroy to gain permission to obtain and produce blueprints for the main housing and the special wing of stage II before receiving approval for the materials setting the limits for stage I.

The design developed in 1978 by the Urals division of the Atomelektroproyekt Institute for organization of the construction of stage I never became the master plan for the job. The design's basic principles specify neither the assembly of large unit components nor the combination of equipment assembly with the construction of the reactor structure. On this basis, Saratovgesstroy considered it necessary to give the development of the plan for organization of the construction of stage II of the Balakovo Nuclear Power Plant to the Kuybyshev filial of the Orgenergostroy Institute whose specialists did much to improve the technology for assembling the equipment to stage I and also made corrections to the blueprints for stage II that allow for the increased level of industrialization of the basic solutions according to the design for stage I and the reduced labor costs and completion time.

The plan for the organization of stage II should become the chief document which, in accordance with the standards for completing various steps of construction work and the activation of various objects, distributes capital investment and construction work and regulates the organization of construction work, the demand for worker cadres, the volume and schedules for the delivery of building structures, materials, technological equipment and machinery and their distribution to various work points. A positive role could be played by Gosplan's confirmation of the permanent status of certain types of basic technological equipment for the nuclear plant's stage II as well as Gosstroy's permission to produce a reduced volume of technical documentation on the design for stage II in view of its sameness to stage I. One might hope that the appropriate ministries and departments will take an understanding attitude toward the problems facing one of the leaders of power plant construction in our country.

In conclusion, it is important to note that the progressive engineering ideas introduced to the line construction of the generating units at the Balakovo Nuclear Power Plant will guarantee high performance as the most important prerequisite to the successful start-up and reliable operation of the plant equipment.

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## NUCLEAR POWER

### BRIEFS

**EXTRA WORK AT IZHORSKIY PLANT**--The collective of the "5000" unit is the flagman of the domestic nuclear power equipment association "Izhorskiy Plant" in Leningrad. It decided to work a Communist Subbotnik [Saturday work day] in honor of the 27th Party Congress with increased labor productivity. On the unit are rolled sheets of high quality steel which are designed for the manufacture of power equipment for nuclear power plants. The shock labor day will be an impetus for accelerating completion of the increased production of rolled steel, an obligation assumed in honor of the 27th Party Congress, in which the unit is to complete its year's task in less than six months. [Text] [Moscow SELSKAYA ZHIZN in Russian 23 Jan 86 p 1]

**AZERBAYDZHANSKAYA AES DECLARED SHOCK PROJECT**--Azerbaydzhanskaya SSR-- Construction of the nuclear power station is declared a shock project. "There are already preparations underway," reports the leader of the "Azenergostroy" Trust, Rasul Gamidov. Introduction of the first power unit of the plant is planned for 1992. The power from our nuclear power plant will be used in all the transcaucasian republics. The cadre for our station are being trained at Obninskiy Nuclear Power Institute and the Azerbaydzhanskiy Institute of Petrochemistry imeni M. Azibekov. We are organizing a special professional and technical school for 750 persons. More than 30 institutes of the nation, together with six republic-level [institutes] are planning the various production projects for the AES. At the "Azgosproekt" [presumably Azerbaydzhani State Planning Institute] there has already been completed the general plan for the future village for construction workers and plant personnel. In the new city for nuclear power plant personnel will be five-, nine- and twelve-apartment buildings with improved planning of apartments. They will form four neighborhoods, united by an administrative-cultural and trade-services center, with a medical facility, sports facilities, a wooded park on the banks of the reservoir, and docks for sail and rowboats. There are plans for schools, child care facilities, and day nurseries. In short, everything that there would be in a modern city [will be here]. [Text] [Article by K. Madatov: "A New City is Being Built", Moscow NEDEL'YA in Russian No 8, 17- 23 Feb 86 p 5]

**AUTOMATED SYSTEM AT ZAPOROZHSKAYA AES**--Energodar--Specialists have started installing an automated control system for the basic equipment of the third power unit of the Zaporozhskaya AES. Such tempi of work as are being achieved on the site of the Zaporozhskaya AES are previously unknown in the nuclear power industry. Recently work was begun on the first power unit with a one million kilowatt capacity, and the second is right behind it. And today they are finishing work on the framework for the foundation of the sixth unit. The

interval separating the power engineers from the regular start up or the next "millionaire" has been shortened to one year! The basis of such a high rate is the streamlined method of AES construction, first introduced in Energodar. "We are now finishing installation work on the third power unit", reported the Chief Engineer of the site V. Dudnik, himself a high-class installer. In a few days the basic installation will be completed on the turbines with one million kilowatt capacity. In a month we will begin testing the generator. [Text] [Article by A. Kaybyshev: "Shock Speed", Moscow IZVESTIYA in Russian 5 Apr 86 p 1]

FOURTH POWER UNIT AT KURSKAYA AES--Working at planned capacity of one million kilowatts is the fourth power unit of the Kurskaya AES, which delivered its first current at the beginning of December of last year. The crew of power engineers delivered this one and one-half months ahead of plan. [Text] [Moscow EKONOMICHESKAYA GAZETA in Russian No 8, Feb 86 p 5]

CONSTRUCTION OF TATARSKAYA AES--Kamskiye Polyany, Tatarskaya ASSR-- The new power center, the Tatarskaya AES is being born on the Nizhnyaya Kama. On 19 March at the industrial site where the reactor hall will be built, the first shovelful of dirt was removed. This honor was won by the unified crew of scraper operators of Cavalier of the Order of Lenin U. Naurbiyev, from the "Kamgesenergostroy" Association. In the rapidly growing Nizhnekamskiy Territorial-Production Complex there are now five thermal and hydro- power plants in operation. With the introduction of the AES, whose construction was described in the Basic Directions, the power potential of the region will double. At a solemn meeting of the builders and the installers in answer to the decisions of the 27th Party Congress, they accepted an obligation to accelerate the start up of the first power unit by one and one-half times. [Text][Article: "The Address of the New Structure is the Tatarskaya AES", Moscow STROITELNAYA GAZETA in Russian 21 Mar 86]

CONSTRUCTION START FOR TATARSKAYA AES REACTOR UNIT--Kamskiye Polyany, Tatarskaya ASSR--The first shovelful of earth has been dug up from the site of the future reactor section of the Tatarskaya Nuclear Power Plant which is under construction. On the banks of the Nizhnyaya Kama there is being built one of the most power AES's in the country. The crews of power construction personnel have already started on the sites for the Pioneer base, the loading dock, the purification building, and have laid about one hundred kilometers of roads. The first multi-story apartment buildings have been erected. [Text] [Article by Pravda Correspondent N. Morozov: "A Nuclear Plant is Born", Moscow PRAVDA in Russian 30 Mar 86 p 2]

NEW EQUIPMENT FOR IZHORSKIY PLANT--Komsomolsk-na-Amure--One entire railroad train was required to transport a grinding machine for preparing castings which was ordered by the Leningrad Production Association "Izhorskiy Plant", and was manufactured by a crew of the "Amurlitmash" Plant. The building of this machine, the first in this country, makes possible preparation of units weighing up to 200 tons, and allows the power construction personnel to substantially increase the productivity of labor and the quality of processing for parts for pipes and other large-capacity units. The order from the Leningraders was filled by the machine builders on the Amur two months ahead of schedule. [Text][Article by V. Dolgodvorov: "The Order from Izhorskiy", Moscow TRUD in Russian 10 Apr 86 p 2]



## NON-NUCLEAR POWER

### ACCIDENT AT NOVOSIBIRSK THERMAL POWER STATION

Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian 19 Feb 86 p 4

[Article by a. Odintsov: "Explosion Avoided: How Scientists Found a Way Out of a Critical Situation"]

[Text] Novosibirsk--The inside of the boiler was a veritable hell. From the walls, like those in a fairytale sorcerer's castle, hung hideous stalactites of slag, ash and dust. All around, there was blackness, soot, carbon dioxide fumes, plumes of steam, and occasionally pierced by the glow of red-hot lava....

This extreme situation in one of the primary boilers of the Novosibirskaya TETs-4 [Heat and Electric Power Station] could have had far-reaching consequences. Three of the city's thickly populated districts, where major industrial enterprises are concentrated, had their heat supply threatened. The events of last winter, when Novosibirsk found itself literally in the grip of a 40-50 degree freeze, were still fresh in the memory: this was a time when pipes ruptured, when there was no heating at all in many apartments and when transport was interrupted.

The party gorkom held a special session. They even called in specialists from other cities. Professor A. Deribas, chief of the GIT [not further identified] Special Design Bureau also attended the meeting. The point is that this thermal power station uses coals from local coal fields, and its boilers were built to handle dry ash.

Professor Deribas was called upon, along with the other specialists, to quickly solve the not altogether ordinary problem of cleaning the central heating plant's boiler. The situation was further complicated by the fact that the accumulated slag--some 350 cubic meters of it--had become a melted mish-mash in the "bag" which had been created of the thick incrustation of slag and the excellent thermal insulation material. The process of cooling and congealing this "bag" threatened to be drawn out into an indeterminate amount of time.

The specialists, who know how to deal with TETs boilers proposed first of all to cool the slag with water, and then to remove it with pickaxes. And so it



went, layer after layer. But no one knew how much time this would take. Afterwards, in the Special Design Bureau, they showed me a piece of slag from the ninth boiler. It was light, but at the same time solid, as if it had been pressed under tremendous pressure. In short, a hard piece of nut-coal, tough even for a pick.

Deribas suggested that this "plug" be blown up. Along with the chief of the Special Design Bureau for the TETs, the team was augmented by sector chief V. Ogolikhin and blasters G. Sazanov and G. Rodikov. Their task was to inspect the boiler's interior and to outline a plan of action.

Andrey Andreyevich Deribas and Viktor Mikhaylovich Ogolikhin are tall, strong men. With some difficulty they squeezed through the narrow window into the boiler, where the clean-up work had already begun. They asked the workers how long it would take to finish. The answer: "No sooner than a month!"

Never in the practice of G. Sazanov, a blaster with 40 years' service, had he seen anything like this. The subject of his expertise was made of melted material: someone from the workers needed to break a hole through the encrusted slag, since the shell was literally beginning to burn beneath their feet.

They considered the use of an applied charge to be inadvisable, since the explosive would detonate on the surface of the shell. They decided to drill. But how? And how were they to apply the charges?

Ogolikhin was appointed leader of the group. The group had to turn for help to the Siberian Division of the Academy of Science's Institute of Mining Affairs to which a perforator of adequate size and power was shipped. They brought it to the TETs and began drilling. By the time they had drilled through several centimeters, the igneous mass had covered over the borehole. Things sped up when they began using metallic pipes to cool the bore holes bit by bit with water and then went on drilling. The slag began to harden, but would allow us to drill no deeper than 80 centimeters, so we poured on water and boiling water spewed back out, as if shot from a cannon.

The high temperature would have acted as a spark for the explosive's detonator. It was decided to prepare the charges within a strongly-built multilayered jacket--polyethylene first, then asbestos, and finally hermetically packed into a metallic casing. In order to insure absolute safety during this "demolition" operation, detonating fuse was used. The charges were made small, at 100 and 150 grams apiece, so as not to damage the boiler.

Sazanov prepared the charges. Then Ogolikhin and the veteran blaster G. Rodikov, already inside the boiler, had inserted them into the fuses. In the clouds of steam, they had to search for the openings almost by touch. The minutes ticked away during this operation, and the men worked quickly in order to get out of the boiler before the charges got too hot....

The first five bore holes exploded. This formed a large excavation in the middle of the slag plug. Red-hot lava was exposed, and they began to pour cold water on it. The slag cracked and began to fracture, which intensified the destructive effects of the explosion.

As the division chief, V. Nesterenko, a candidate of physical and mathematical sciences later recounted, "In a situation such as this, it's almost impossible to make a precise calculation. But we were nevertheless able to determine the pressure on the wall of the boiler. This in addition to our intuition and the experience gained from this collaborative effort....We saw the boiler in principle as a model of a metallic chamber in which we were conducting blasting experiments in the Special Design Bureau."

He had shown up at the TETs on the second day of the blasting work, on a Saturday. As Vitaliy Fedorovich himself said, had this been a different, "normal" case, one of the facility's own associates would have been sent for. He himself decided to crawl into the scorching heat inside the boiler. Of course any of the operation's participants could have dropped out, basing their action on the instruction: first, they say, let the boiler cool down, and then make your demands. In this situation everything hinged on the person, on his initiative, his decisiveness, and finally on his boldness.

Second in importance were the the seven detonators. After the explosion, and after the smoke had cleared, everyone gave a sigh of relief: the "plugs" were gone, and all that was left was a heap of chunks of slag. Removing them was not especially difficult....

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## NON-NUCLEAR POWER

### HIGHER STEAM TEMPERATURES, NEW LOOK AT KANSK-ACHINSK COAL URGED

Moscow EKONOMICHESKAYA GAZETA in Russian No 4, Jan 86 p 9

[Article by Candidate of Economic Sciences N. Vasilev and Kashirskaya GRES laboratory director M. Gonchar from Moscow Oblast: "Thermal Power-Generating Equipment of the Minenergo System is Operating Below Par: The Result is Wasted Fuel"]

[Text] In 1968 the SKR-100 power-generating unit at the Kashirskaya GRES came on line. Steam temperature upstream of the turbines here was 650 degrees Celsius, while pressure was 300 kilograms per square centimeter. Such extremely high steam parameters were being achieved for the first time in the domestic power industry. Before that time, a temperature of 565 degrees was applied to 150 - 200 Megawatt turbines, while larger turbines were operated at 580 degrees.

Operation of the power-generating unit over the course of a year confirmed the efficiency of using extremely high parameters. It appeared that they would be introduced at other power stations as well. However as it turns out, things took a completely different course.

Three years later, a directive was issued by the USSR Ministry of Power and Electrification calling for a mandatory reduction in temperature to 540 degrees to be implemented across the board at all power-generating units. This included both those in operation and those still on the drawing boards. This decision was based on damage sustained by some boilers due to overheating. Early on, it was determined that the problem had nothing at all to do with temperatures, but was due rather to design flaws in the boilers and sub-standard welds traced back to the boiler factories. Now, it would have been perfectly logical to expect that once these causes had been eliminated, the directive from Minenergo would be rescinded. But time went by and gradually, operating at reduced temperatures became the norm.

In terms of economics this is by no means a harmless matter. At the Kashirskaya GRES alone, more than 30,000 metric tons of ideal fuel is consumed unnecessarily each year at a cost of about 750,000 rubles. In the industry as a whole, a total of almost 3 million metric tons of fuel equivalent is completely wasted. It would be enough to generate 9 billion kilowatt-hours of power.

A return to the original steam parameters, not to mention the implementation of extremely high parameters would require modernization of equipment, i.e. it would entail a certain material outlay. There is a widely held notion among energy workers that it would be cheaper to expand the use of cheap kansk-achinsk coals: i.e. this would, goes the argument, permit a reduction in the cost of generating power without entailing any equipment modifications.

The current list price for a metric ton of kansk-achinsk coal is not high: 7 rubles. However, in the Minenergo fuel distribution, they presently account for only 10 percent. And that is supposed to be cheap? It would appear that at present, its power-generating value is being underestimated. And here is the reason why:

Kansk-achinsk coal can be used as a raw material for the chemical industry. To be exact, it can be used in the extraction of liquid synthetic fuel used to replace crude oil.

The coal is mined by the inexpensive strip method. In the process, however, some arable land is also stripped away. A curb on strip mining would slow the destruction of valuable farmland. Moreover, the less low-grade brown coal burned, the lower the resultant pollution of the environment through emissions.

In light of the factors just cited, the price of this coal no longer seems so cheap.

Going by the current list price for coal, there is no way to justify the capital investment for equipment modification. But if the waste cited above is taken into account, then modernization of power-generating units would completely pay for itself.

For a start, it would be simpler to restore high temperature operation at those units which were previously able to sustain such. This would include the Kashirskaya GRES as well as those units where equipment had been overhauled in a timely manner. This could then be followed up by gradually outfitting the remainder for conversion.

Increasing the steam temperature to 650 degrees, and pressure to 300 kilograms per square centimeter at a single 800 Megawatt unit, would cut fuel consumption by 7.7 percent. This in turn, would enable savings in the neighborhood of 120,000 metric tons of kansk-achinsk brown coal which, roughly calculated, would amount to more than 4.5 million rubles per year including freight costs.

Recent years have witnessed the appearance of new high-strength steels. They make possible still further increases in steam parameters. In our opinion, optimum temperature and pressure levels fall somewhere between those currently established and the maximums tested at the above-mentioned SKR-100 unit of the Kashirskaya GRES. The problem as defined now only needs for the USSR State Committee on Science and Technology to bring in the necessary experts to provide a solution.

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NON-NUCLEAR POWER

CONSTRUCTION DELAYS AT PERMSKAYA GRES

Moscow STROITELNAYA GAZETA in Russian 24 Jan 86 p 1

[Article by TASS correspondent R. Trusov: "Why There Was No Start-Up"]

[Text]—Dobryanka Perm Oblast—Time is being counted off in hours and days for the builders of the Permskaya GRES [State Regional Electric Power Station]. And still, in spite of the shock work, they have failed to light the symbolic lamp from the generator of the station's first block within the year just past, i.e., within the deadline which was set in accordance with the decisions of the 26th CPSU Congress. The power-consuming enterprises of the Western Urals came into the new year with a shortage in their electricity requirements which the first-born Permskaya GRES had to reduce to nothing.

Installation brigade leader A. Khorev, who is taking part in the assembly of his 25th power block was asked, "What is hindering your efforts?"

"We are putting together a boiler which is almost 100 meters high," he answered. "There are no trifles here. The sequence of the assembly depends on the unconditional availability of everything necessary to do the job. If we have everything we need, then we save a lot of time. But look at the sequence for the boiler's foundation. Instead of two elevators, only one is working. And arguments about the other one have been going on for a long time. We understand that it is no simple matter to make provision for everything at such a large-scale project. But in fact, the only way to guarantee success is by having all the services and subdivisions cooperate efficiently. I think that non-coordination is the primary cause of our lack of success, and that's what we're trying to eliminate."

"Having to put off the start-up command served as an extremely serious lesson for us," said V. Kotov, secretary of the Perm CPSU obkom. "And it gave us the occasion to analyse the way in which the numerous operational subdivisions were coordinating their efforts. From the very beginning the construction project found itself controlled by party organs. And we must not fail to mention that its collective has done excellent work during the past year. However, the overall delay in installing the boiler, which has been put aside for 22 months, has been reduced very little."

I don't think the cause of this lag lies only in the "strategic" miscalculations.

The GRES has dealings with thousands of suppliers. To a great extent, it is they who are responsible for fulfilling the plans. Metalwork deliveries were also particularly sporadic at the construction site. We plan on doing whatever is necessary to operate more efficiently and in addition we are going to strive to be more responsible.

A line of steel columns is making its way from the Permskaya GRES' main building toward the construction area. The building is to be enlarged still more for another bay—that which will house the second power block. Plans call for a total of six of them, and they will generate 4.8 million kW overall. Four generating units are slated for construction during the 12th Five-Year Plan period. At present, all our work is being concentrated on the Permskaya GRES start-up facilities, and we are working full speed ahead.

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**NON-NUCLEAR POWER**

**OVERCOMING DELAYS AT KATEK BEREZOVSKAYA GRES CONSTRUCTION**

Moscow STROITELNAYA GAZETA in Russian 5 Feb 86 p 2

[Article by TASS Correspondent: "KATEK's Steps"]

[Text] Chernenko--Krasnoyarsk Kray--The work pace was increased more than 2-fold during construction of the Berezovskaya GRES-1 [State Regional Electric Power Station], and this was accomplished without increasing the collective's work force. This station is the pioneer facility of the Kansk-Achinsk Fuel-Energy Complex. The builders finished preparing the foundation for the first power block turbine, which has a capacity of 800,000 kW.

This acceleration was dictated by the urge to overcome the disruptions of recent years, i.e., the time taken to start up the first unit, the deadlines for which were reset several times.

We decided to restructure our planning system, having first of all ensured its practicability," says I. Birichevskiy, deputy chief of the KATEKenergopromstroy [Kansk-Achinsk Fuel-Energy Complex Power Industry Construction] Association. And here are the first results. If past practice dictated that detailed work-ups of the year's program were completed only by the beginning of the year, i.e. the builders, even in January, had no knowledge of the year's prospective plans, then these days the plan is drawn up as early as October. Each line in the plan is backed up by the necessary resources.

The primary consideration at present is that the planned schedule be observed to the letter. The builders' primary task is that of feeding heat into a huge--120 m high--building, where a large hot-water heating unit will be in operation. It is not possible to heat premises such as this with the usual equipment. The Association, working in collaboration with GRES [State Regional Electric Power Station] specialists, has developed a heat supply plan which will make it possible to supply heat here to this facility in the shortest possible time, that is, by February. And this will make it possible for the builders to begin installing the main water-heating units by the opening of the 27th CPSU Congress.

The human factor played an important role in speeding up this effort and in seeking out reserves. The work of the carpenters and concrete workers, for example, was delayed for a long time by the concrete-mixing plant and its irregular deliveries of materials to the worksite. The builders themselves set about solving the problem. Brigade representatives carried out a number of raids on the enterprises and found out the reasons that the operation was not proceeding smoothly. It was decided first of all to correct the time taken for dinner breaks and shift changes. These had heretofore not been coordinated and had resulted in a daily four-hour period during which nothing was accomplished. The builders' persistence produced results: losses of work time were reduced to a minimum. In time the increasing reliability of deliveries and the facilities' improved engineering preparation made possible an expansion in the number of brigades working on unified job order. And this in turn was helpful in sharply increasing labor productivity within the collectives.

"Right now, in the final stage, preparation for the final step has begun: the start of installation of our mammoth boiler," says I. Birichevskiy.

"The production equipment is being assembled at special areas, and erection of one more bay, which will house the installation base. This is where all the boiler units will be brought up to maximum readiness, so that in future we can take care of all the labor-intensive operations right in the same building. We intend to finish installing the turbogenerator for the first block by the end of the year. Ahead of us is construction of the Berezovskaya GRES-2.

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## NON-NUCLEAR POWER

### LOSSES IN THERMAL POWER TRANSPORT SYSTEM

Moscow EKONOMICHESKAYA GAZETA in Russian No 8, Feb 86 p 9

[Article by N. Yaroslavskiy, power engineer: "How to Maintain Heat Levels Within Heating Systems"]

[Text] On the average, the service life of the heating systems around the country comes to some 10-15 years, which is from one half to one third less than the standard. The average service life for heat supply systems is still less, at 5-7 years. Their being shut down for repairs was no rare occurrence. Losses of transported power were extensive.

At the same time that, according to data from 1985, 65-70 million tons of standard fuel are being saved at TETs's [heat and electric power stations] and large boiler houses, approximately twice this amount is being irrevocably lost from consumers. It seems that we need to bring order to the administration of the heating industry. The Lithuanian SSR has had positive experience in this area, as has the city of Stavropol, where the power engineers' unified balance shows heat sources and heating systems.

No less important is the question of the condition of the heating systems. The wide use of heat piping placed in impassable ducts wrapped in suspended insulation made of mineralized products and reinforced foam concrete are quite expensive and unreliable. The distribution of ductless heat piping wrapped in asphalt-perlite insulation which has come about during the past decade is also in need of improvement.

So far as is known, not a single one of the designs for heat conductors, neither those used prior to now nor those now under construction have undergone proper testing. This is the reason that not one of them meets the stringent requirements to the necessary degree.

A multitude of organizations with no experience in this field are involved in the planning and construction of heating system networks. Is this not the reason that the number of networks needing repairs or replacement keeps on growing year after year?

Meanwhile, a leading institute--VNIPInergoprom [All-Union Scientific Research and Planning Institute of the Power Industry] was set up within the USSR Min-

energo system. Its functions include the coordination of scientific research and technical developments regarding the problems of central heating. The institute, alas, places little emphasis on these, its functions. The developments of the country's other institutes are outside its field of activity and its support. Some examples are the development of the ductless heat conduits which use poured-in-situ frothed rigid foam plastic jackets which are derived from phenolic and polyurethane resins, or the completely ductless heat conduits wrapped in polymer-asphalt and the heat conduits which use water-repellent mineral powders.

As is commonly known, the newly developed ductless heat conduits cost less and are more economical than the heat conduits in non-continuous channels which are used so widely at present. Their service life is 2-3 times longer, with one third to one quarter the heat losses. This adds up to a 90-95 percent saving in ferroconcrete.

An examination of the condition of heating and central heating systems allows the inclusion of the following position in the "Fuel-Energy Complex" division of the plan for Basic Directions for the Economic and Social Development of the Country: "To improve the effectiveness of district heating and central heating supplies through the development and widespread introduction of new and completely ductless heat conduits, by improving existing heat conduits and by raising the technical level, the reliability and the economy of our heating systems."

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## NON-NUCLEAR POWER

### CRYOGENIC TURBOGENERATOR AT LENINGRAD ELEKTROSILA PLANT

Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian 13 Feb 86 p 1

[Article by Yu. Nikolayev: "A Step Toward Greatness in Power Engineering: Elektrosila Workers Begin Comprehensive Testing of the First 300,000 KW Cryogenic Turbogenerator In World Practice"]

[Text] Leningrad--Doctor of technical sciences G. Khutoretskiy, who is the chief engineer for the Elektrosila Scientific Research Institute's turbogenerator department, talks about the significance of what is going on in the association:

In the near future, the concept manifested in this machine will constitute the basis for a radically new direction in the development of power engineering. The limits of output have in fact been achieved by traditional turbogenerator designs. But the national economy requires that they be constantly increased. Old designs would merely increase the unit's size and weight. This is a totally uneconomic way out of the situation, and that is also the reason it has been decided to use extremely cold temperatures to solve the problem.

It is generally known that many metals and alloys, when cooled down to temperatures approaching absolute zero, conduct current with practically no losses. This is known as the superconductivity phenomenon. It can be used to devise a small generator having truly gigantic output.

Specialists have been working to develop cryogenic turbogenerators for a number of years now. In Leningrad they have built and tested just such a 20,000 kW experimental-industrial generator, and now the superconductivity effect provides a practical advance toward significant power production. The possibility of developing turbogenerators capable of generating one or two million kilowatts has already been considered.

The production of a radically new generator has required tremendous scientific, technical and organizational efforts. Every detail of this unique generator has found reflection in the network. A divisional schedule has been set up for the production of the rotor, which is the "heart" of the unit. At the same time, the hitherto unencountered complexity of this unit has been emphasized. The association production staff have been given personal responsibility regarding the manufacture of every part of the generator. Two supervisory commissions work constantly.

Elektrosila personnel have obtained the vigorous help of the Izhorskiy Plant's the Proletarian Plant's, the Admiralty Association's workers and specialists, as well as that of many other enterprises in Leningrad. Collectives from the plants and scientific research organizations of Novosibirsk, Kharkhov and Petrozavodsk have made their contributions as well.

Extreme difficulties, such as untried manufacturing procedures, the complexity of the design, the extremely high requirements for precision and the cleanness of its machining have been encountered in the process of making the rotor, says deputy turbogenerator shop chief B. Solovyev. Meanwhile the shop is still responsible for fulfilling its normal production plan. Our work continues on two fronts, with maximum efforts being expended on each. Of course, we would be unable to work so efficiently and amicably without the highly organized and I would say creative efforts of all those who have been working alongside us.

The tool shop collective has manufactured over a hundred attachments and accessories according to the original plan. These include a special lathe for boring internal rotor holes. This lathe was devised by a creative brigade whose members include designer N. Vilov, senior foreman V. Pavlov and a group of fitters and milling machine operators. As the generator was being manufactured, there arose a need for additional types of accessories. This was taken care of quite quickly, and was above the basic plan as well.

The pilot-experimental shop collective made a significant contribution to speeding up the work. A number of small but extremely important parts were fabricated here. Take, for example, the heat plugs, which have to operate in very complex conditions: they insulate the rotor's cryostat from the external environment. On one side of the part there is the normal temperature of the earth, and on the other--a cold as cold as deep space. A regular plug would not be suitable here. A special multi-layered plug had to be made of high-strength metals and plastics. Here is where the creative collaboration of engineers S. Vinogradov and V. Kazarin, the manufacturing engineer L. Shulman, fitters I. Shtyrkin and N. Yepishin and lathe operator V. Khryashchev produced success. They were not allowed the right to make mistakes.

The tests began. Elektrosila personnel have no doubts about the results. The quality of this effort, which has tremendous national economic significance, was brought about through the high degree of awareness and responsibility of the creators of this unique machine.

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## NON-NUCLEAR POWER

### BRIEFS

**TETs RENOVATING, REEQUIPPING DISCUSSED**--Yesterday the CPSU MGK [Moscow Municipal Committee] bureau discussed, at their regularly scheduled meeting, the work being done by USSR Minenergo operational executives and party enterprise organizations on the renovation and technical reequipping of the TETs's [Heat and Electric Power Stations], and the heating and electrical systems of the city of Moscow. Mention was made that the previously adopted decrees of the CPSU MGK for improving the reliability and stability of Moscow's heating and electricity supplies are being unsatisfactorily executed. A considerable reduction in heating capacity was allowed to occur at Moscow's TETs's during the 11th Five-Year Plan period. Individual power blocks were not put into operation, power plant equipment was slow in being replaced, construction assignments for new heat conduits and resetting of those which are worn out are not being carried out, and the problems of protecting heating system conduits from corrosion have been dealt with too slowly. Mosenergo [Moscow Regional Power Industry Administration] administrator comrade Serebryanikov and planning institute executives, as emphasized by the bureau, bear personal responsibility for this situation. The CPSU MGK bureau has charged the Moscow gorispolkom and Mosenergo and the appropriate building and planning organizations with the preparation of coordinated measures for the realization of the Moscow power system's development program during the 12 Five-Year Plan period, and with coordinating the efforts of the power engineers, project planners, and construction and installation workers to this end. The USSR Minenergo announcement to the effect that it would take the measures necessary to increase the city's power production capacities and to augment its construction organizations servicing the industry was taken under consideration. The CPSU MGK bureau charged Moscow's power production party organizations with carrying out consecutive efforts to mobilize their labor collectives for the purposes of taking the measures outlined for the years 1986-1990 to improve the reliability of Moscow's power and heat supplies, to upgrade the exactingness required of the work forces for the prompt and qualitative execution of their plan assignments. [Excerpt] [Moscow MOSCOV-SKAYA PRAVDA in Russian 30 Jan 86 p 1] 12659

**ROLLING MILL FILLING ORDERS**--The collective of the country's largest rolling mill, the "5,000", has begun filling orders from power industry construction sites for the 12th Five-Year Plan period. The mill was put into operation by the Izhorskiy Plant Association at the end of last year. [Text] [Moscow EKONOMICHESKAYA GAZETA in Russian No 2, Jan 86 p 3] 12659

**VOLZHSKAYA GES WORKERS PRAISED**--This year's first shift of power engineers at the Volzhskaya GES [Hydroelectric Power Station] imeni 22nd CPSU Congress have been paid special notice for their good works. In a 24-hour period here almost 21 million kilowatt-hours of electric power were generated. [Text] [Moscow EKONOMICHESKAYA GAZETA in Russian No 2, Jan 86 p 3]

**MIATLINSKAYA GES GENERATOR OPERATING**--On the 2nd of January the first generator of the Miatlinskaya GES [Hydroelectric Power Station] was put under industrial load. This is the third station of the Sulakskiy series in Dagestan. [Text] Moscow EKONOMICHESKAYA GAZETA in Russian No 2, Jan 86 p 3] 12659

**ZHINVALSKAYA GES ADDS GENERATORS**--The Zhinvalskaya GES [Hydroelectric Power Station] in the Georgian SSR has put its third and fourth hydroelectric generators into operation. The putting into operation of the underground power factory has been completed. [Text] [Moscow EKONOMICHESKAYA GAZETA in Russian No 2, Jan 86 p 3] 12659

**ENGINEERS DEVELOP POWER ACCESSORY**--Kokchetav--Kokchetav power engineers have developed a new method which promises to be economically profitable for a number of sectors of the country's national economy. It used to be that 1,150 kW power lines had to be shut down during repairs. In order to keep from disrupting the work rhythm of hundreds of enterprises, to keep from causing discomfort for the residents of a number of cities, and power shortage was made up by other power stations. A great deal of time was lost in preparation for this power switching which of course required the expenditure of reserve power and of electric power itself. Now, with the help of some devices developed by specialists an electrician moves along the wires in the span between the supports in a seat. A protective suit protects him from the effect of the electromagnetic field. This new method, which was tried for the first time in the Ukraine and in Kazakhstan, is soon to receive its general registration for use in repairing power transmission lines. [By IZVESTIYA correspondent G. Shipitko] [Text] [Moscow IZVESTIYA in Russian 12 Feb 86 p 1] 12659

**NOVOSIBIRSK'S TETs-5 UNDER CONSTRUCTION**--TETs-5 [Heat and Electric Power Station-5], which is now being built, will help meet Novosibirsk's increasing power and heating demands. The output of this new power station will be sufficient for more than the increase in residential construction. It will also support the operation of industrial enterprises and the city's social and cultural facilities. The TETs-5's first power block was recently put into operation. [Excerpt] [Moscow EKONOMICHESKAYA GAZETA in Russian No 7, Feb 86 p 5] 12659

**DAYTIME, NIGHTTIME SURGES TEAMED**--(Moscow)--Ever since the Middle Ages people have tried to make use of "lunar" power. They used to dam off a bay from the ocean, and used the ebb and flow of the tides to turn their mill wheels. A special feature of this form of energy is its pulsing, sporadic nature. The use of reversible generators makes it possible to shift the working time of tidal power plants from the lunar cycle over to the solar cycle, in which man lives, and to feed the power generated by these tidal power plants during the hours of peak demand. The successful experiment in operating

the Kislogubskaya PES brought to fruition the suggestions concerning the construction of the extremely powerful PES's at the Gulf of Mezen (15 million kW), the Gulf of Turgursk (10 million kW) and Penzhina Bay (21-87 million kW), all of which are located on the White Sea and the Sea of Okhotsk. However, the transition from the small-scale Kislogubskaya PES to the highly-powerful PES's requires a full-scale trial of the new solutions on a much larger scale. We suggest that, in the second chapter of the Plan for Basic Directions, where mention is made of making use of non-traditional energy sources, that the following be written: "In accordance with the decree regarding the USSR Power Program on the creation of a material and technical base for the continued widespread utilization of tidal power, there be constructed during the years 1986-1990 the experimental-industrial Kolskaya PES, which will have a capacity of 38 MW, and that the technical and economic substantiation be drawn up for the powerful Gulf of Mezen and Gulf of Turgursk PES's". [By L. Mikhailov, chief of the Gidroproyekt Institute imeni S. Ya. Zhuk, V. Shelest, deputy chairman of the USSR Academy of Sciences' KYePS [Permanent Commission for the Study of the USSR's Natural Productive Forces], and doctor of economic sciences, and L. Bernshteyn, doctor of technical sciences and chief engineer of PES plans] [Text] [Moscow PRAVDA in Russian 5 Feb 86 p 2] 12659

WIND POWER STATIONS--Last year wind generators operating in a mountainous area produced 180,000 kW/hours of electric power. At present they number only six, but these wind generators are operating successfully on Buynaksk Pass, and in the settlements and mountainous auls, supplying the rural dwellers and shepherds with inexpensive power. Soon there are to be quite a few more wind-power stations. Scientists of the Dagestan affiliate of the State Scientific Research Power Engineering Institute imeni Krzhizhanovskiy have drawn up a map of Dagestan's wind power resources, which are ten times more powerful than they were formerly, and have developed a design for wind generating installations which are ten times as powerful as previous units. In the future, wind power stations will be used to provide electricity to entire villages and auls. [By A. Kazikhanov, IZVESTIYA correspondent] [Text] [Moscow IZVESTIYA in Russian 23 Jan 86 p 1] 12659

NEW HIGH-VOLTAGE LINE INSULATORS--Slavyansk, Donetsk Oblast--The Slavyansk Bureau of Special Technological Designs [SKTB] of the USSR Ministry of Power and Electrification has worked out 3 new glass insulators for the extra high-voltage transmission lines which will stretch from the world's largest complex of heat and electric power stations in Ekibastuz to the Urals. The PS-210 and PS-300 insulators are made of hardened glass. The first can bear a weight of 21 tons without shattering, the second -- 30 tons. Such durability is needed because insulators are not suspended singly from transmission line towers but in aggregates of so-called insulator chains consisting of dozens of units. Heavy wires are then joined to them. The Slavyansk SKTB works not only with ordinary glass and industrial ceramics. In recent years its specialists have devoted particular attention to plexiglass, rubber silicones, and other polymer mixtures. They are used both in producing the insulators themselves as well as for inter-phase struts, suspensions, and a variety of devices which permit repair work on transmission lines without shutting off electricity. [By IZVESTIYA correspondent N. Lisovenko] [Text] [Moscow IZVESTIYA in Russian 9 Feb 86 p 2] 362



KOMI ASSR INCREASES ELECTRIFICATION--Koygorodok (Komi ASSR)--Another of the Komi ASSR's rural regions has been connected to the country's Unified Power System. This latest power transmission line has stabilized the power supply for agricultural enterprises, kolkhozes, sovkhoses and the municipal services of the Koygorodok area. The new power line, which stretches for over 100 km, was laid through swamps and the difficult terrain of the taiga, and was erected ahead of the planned deadline. Specialists from a mechanized column of the Zapsielektrosetstroy Trust of the Southern Power Networks' Enterprise, faced the severe conditions of the North with teamwork, competence in their engineering solutions, creative initiative and endurance. The Koygorodok area is the next-to-last in the republic of those which are not yet connected to the unified power system. [Text] [Moscow STROITELNAYA GAZETA in Russian 29 Jan 86 p 3] 12659

LINE MAINTENANCE EQUIPMENT DEVELOPED--Zaporozhye--A prototype of a unique piece of maintenance equipment for direct current power transmission lines has been developed in the Zaporozhtransformator Production Association's High-Voltage Equipment plant. In technical language this innovation is referred to as a "capacitor stack" and consists of three 5-meter-high columns. Filled with resistors, they will regulate the "state of health" of ultra long-range power transmission lines, and will correct their operating parameters as well. The new equipment was designed by specialists from the chief designer's department of the Zaporozhtransformator Association. The suggestions of the innovators were translated into metal by V. Bakumovskiy, section chief, Yu. Ilkin, fitter brigade leader, and by fitters A. Pokhilenko and F. Khizhnyak. This apparatus has presently been sent to the All-Union Institute of Transformer Building to undergo a series of type tests. [By I. Sergeyeva, PRAVDA stringer] [Text] [Moscow PRAVDA in Russian 18 Feb 86 p 1] 12659

BALAKOVO POWER LINE OPERATING--Balakovo (Saratov Oblast) 18 [February]--A power transmission line almost 20 km in length, connecting the Balakovskaya AES and local substations with a reliable power bridge has been put under load here. No small number of difficulties were encountered during the construction of the LEP-500. Specifically, a navigable canal and a reservoir had to be crossed. The unique steel supports which had to be erected in these places helped to support the line over these long spans. These problems were handled successfully by collectives of steeplejack installation workers from the Volzhsk division of the Gidromontazh Trust and the Yuzhelektrosetstroy Trust from Donetsk. The brigades headed by K. Sokolov, G. Polosmak, P. Podnebesnyy and others set a good labor example. The Balakovskaya AES has been in operation about two months. During this time, the station has already generated almost 400 million kw/hours of electric power, all of which is fed along the recently erected 500-kilovolt power line into the country's unified power system. [Text] [Moscow PRAVDA in Russian 19 Feb 86 p 2] 12659

KIRGHIZ POWER LINE OPERATING--Dzhalalabad (Osh Oblast)--Power from the first generating unit of the Tash-Kumyrskaya GES [Hydroelectric Power Station] which was started up in the junction between two five-year plan periods, has begun flowing to the southern Kirghiz SSR along a new 220-kV LEP [power transmission line], tests of which have concluded successfully. This power block, which traverses the gorge and summit of the Fergana ridge spurs, was set up by subdivisions of the Sredazelektrosetstroy [Central Asian Power Network Construction] Trust as well as of our enterprise. [Excerpts] [Moscow STROITELNAYA GAZETA in Russian 7 Feb 86 p 1] 12659



## PIPELINE CONSTRUCTION

### ACCELERATED WORK COLUMNS ADVOCATED FOR INCREASED PRODUCTIVITY

Moscow EKONOMICHESKAYA GAZETA in Russian No 46, Nov 85 p 20

[Article by P. Shabanov, chief, Glavsibtruboprovodstroy, Tyumen: "Accelerated Work Columns"]

[Text] The progress of industrialization in capital construction depends upon many factors, and these include economic factors. It is difficult to envision a solution for this problem, for example, without either the reorganization or improvement of the economic mechanism within the industry at all levels of management. The CPSU Central Committee and USSR Council of Ministers decree "Promoting the industrialization of and increasing the productivity of labor in capital construction" sets forth the task of achieving at least 30-35 per cent of the overall increase in labor productivity called for by the Twelfth Five-Year Plan through improvements in the management of both manpower and production and implementation of other organizational measures.

Practical experience confirms the importance of this idea. The fast pace of the work on gas pipeline construction projects, for example, has been to a great extent the result of Minneftegazstroy's [Ministry of Oil and Gas Industry Enterprise Construction] reorganization of its line organizations, which led to the formation of integrated trusts capable of undertaking projects on a turnkey basis on their own, that is, without having to rely on the support of any subcontracting organizations.

Industry organizations working on short sections of a pipeline used to comprise links, which would be subordinate to various specialized trusts. To manage this "composite" outfit would be no easy thing. Questions involving cooperation among the partners, which were frequently guided by parochial departmental interests and considerations, would very often have to be resolved at the main administration level, which would waste valuable time. Management authorities have now been brought closer to production.

Now as far as Glavsibtruboprovodstroy [Main Administration of Siberian Pipeline Construction] is concerned, there has been no need for it to "recut" the organizational "pattern" of its trusts, what with the fact that they have been integrated organizations since the day they were created, that is, for more than 10 years now. In other words, it was precisely our main administration which served as the proving ground where the new organizational structure was successfully tested.

simply delivering materials to the work sites along the route and the construction of major water crossings). This saves the time which used to have to be spent maintaining contact with neighboring crews. All efforts in this administration are focused on a single objective—to bring the completed project on line as quickly as possible. The start-to-finish brigade contract thus becomes reality.

We have also experimented with another form of organization. By way of an experiment, the Komsomolsktruboprovodstroy trust eliminated its construction administrations and made the production sections, to include the integrated, or combined, production lines, the basic organizational unit.

How do the lines differ from the administrations?

The latter are responsible for everything involved in building and bringing a gas pipeline on stream in their sections. The functions of the administration include not only the laying of the "line," but also the assembly of the sections of pipe for this purpose ahead of time, building the cranes, setting up the field housing units and other preparatory operations. The integrated production lines (KTP) focus on a narrower set of tasks—they are responsible only for the actual work on the line itself, for turning out the kilometers as we put it. But this, of course, is very important for the route.

To insure the success of the project, the experimental KTP were given a powerful economic incentive: everybody, including the management, was working under a single job contract, the objective of which was to get the line built in the shortest possible period of time. One would have thought that, at least as far as this particular indicator is concerned, the KTP would not fail to outperform the integrated administrations. But things did in fact turn out differently.

During the 1983-1984 period, the best KTP in the Komsomolsktruboprovodstroy laid 105 kilometers of pipeline, the SU-11 collective of Severtruboprovodstroy 142 kilometers. The production figures per worker in terms of the physical measurements was 475 and 600 meters respectively.

It would be a mistake, of course, to reject the KTP on the basis of the performance of a single season, particularly in view of the fact that the Komsomolsktruboprovodstroy experiment was not really properly organized. Things still turned out just about as expected, however. It was the structure of the pipe-laying administration, which depends less on the speed of allied organizations and which can respond more readily to unforeseen situations, which in the end helped win the "argument."

It is the one better adapted to the seasonal nature of pipeline laying operations. It can make more productive use of its production capacities during the extended periods of time between seasons and can relocate better and faster to new construction sites along the route of the line. But the most important advantage the administration form of organization offers is that it is operationally oriented toward the end result of the project.

Following the example of Severtruboprovodstroy, we are now in the process of forming this type of organization within other trusts as well. But in addition

To search for new ways to make improvements, to include in the area of manpower organization, has been and remains one of our top-priority tasks. I can venture to say with confidence that the production lines we are operating today differ sharply from the way they were when this main administration was formed.

In laying a pipeline it will always be essential to pay strict attention to the proper sequencing (continuity) of the basic operations involved, from the initial clearing work along the route of the line through the delivery and welding of the pipe to form the line and then the final laying and filling operations. It is not hard to see, for example, that the crews which actually lay the pipe can do only as much as the crews which precede them "allow" them to do. But the way things used to be organized proved an obstacle in precisely this respect, that is, it made it impossible to step up the pace of operations during the final phases of construction.

Administration experts determined what resources the field operations crews (links) would have to have to insure high levels of production finished, that is, pipeline laid, per day. The trusts took these computations and consolidated their welding columns, formed brigades of drivers and machine operators and organized their work into two shifts and paid them on the basis of a single job contract.

This made it possible to not only heighten the material interest the individual links had in the success of the project as a whole and improve use of the machinery, but also create within the collectives conditions more conducive to technical progress. The combined assembly and welding brigades, for example, very quickly mastered and began using the accelerated assembly-line methods of welding and the new high-capacity welding apparatus mounted on the Kirovets tractors designed by rationalizers of the Severtruboprovodstroy trust.

The upshot of all this was that this administration was the first in the industry to create the now widely known integrated accelerated columns, which can lay 100 kilometers and more of large-diameter gas pipeline over the course of a winter. The production lines have more than doubled their average seasonal production.

In this situation, though, the operational links are still somehow isolated from one another, there is no assurance of really efficient management and the brigade contract is not functioning at its highest degree of effectiveness.

It was therefore decided to undertake an experiment. In January 1982, upon the initiative of the Severtruboprovodstroy trust, an excavation and earth moving section was incorporated into the special assembly administration headed by USSR State Prize winner A. Rekoshetov, that is, an integrated pipeline administration was formed. A short time later the same trust formed two more of these organizations.

The results speak for themselves: as a rule, the combined organizations are the first ones to complete their sections on the pipeline and they surpass the other line crews by a substantial margin in terms of labor productivity.

And this is no coincidence. The combined administration functions as virtually its own boss on the project it is working on (its responsibilities go beyond

to the integrated administrations, there remain the specialized organizations as well. And I don't think we should be too hasty in any effort to reorganize them. Any such reorganization should be preceded by a period of thoroughgoing preparation, first and foremost by a strengthening of the productive base.

At the same time, however, success should be taken to mean that there are no other ways to improve organization. Under instruction from the ministry, we are now engaged in an important new experiment: we have formed centralized maintenance and repair services within the trusts, to which are going to be transferred the corresponding organizations from within the construction administrations. This kind of concentration of manpower will expand our capabilities and accelerate the creation of new pipeline administrations.

As was pointed out at the April (1985) CPSU Central Committee plenum, we must move ahead more aggressively with efforts to expand the rights and range of independent decision-making for the individual enterprise and to introduce the cost-account system. I am of the opinion that projects undertaken within the framework of the administration should also be organized on the basis of the single contract, in accordance with which there will be a direct relationship between how much administration workers turn out in terms of finished production and how much they make.

There is a rigid barrier which today is stifling the initiative of the pipeline-laying organizations. I am thinking here of the practice of re-computation, that is, the practice of cutting the wage funds allocated for above-plan contract work. The reducing factor used in these situations by the institutions of USSR Stroybank [Construction Bank] must apparently be used to motivate enterprises to accept stepped up plan targets. But this is a difficult business for the Tyumen line workers as it is. What they are able to get done above and beyond their plan requirements will as a rule come as a result of innovation and the self-sacrificing efforts people make for the sake of accelerating efforts to bring on line a project of vital importance for the national economy. So for what would we want to deprive them of a small fraction of their wages?

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CSO: 1822/231



## PIPELINE CONSTRUCTION

### PROGRESS REPORT ON CONSTRUCTION OF GAZLI-CHIMKENT GAS PIPELINE

Alma-Ata KAZAKHSTANSKAYA PRAVDA in Russian 29 Nov 85 p 1

[Article by special KAZAKHSTANSKAYA PRAVDA correspondent Yu. Livinskiy, Chimkent: "Building the Gazli-Chimkent Gas Pipeline, The First Kilometers"]

[Text] This major line is going to be a total of 662 kilometers long. Plans call for it to come on line in 1987.

This gas transport artery originates at the big Gazli field in the Bukhara gas-producing region of Uzbekistan. It takes the shortest possible route across the Kyzyl Kum desert, takes to the air over the peaceful waters of the Syr-Darya and then extends across the plains of southern Kazakhstan to Chimkent, where it joins the existing Bukhara-Tashkent-Frunze-Alma-Ata pipeline.

The construction of another line was dictated by the need for a reliable, uninterrupted supply of gas to southern Kazakhstan and Kirgiziya and greater satisfaction of the ever increasing demand for the economical blue fuel to meet the needs of both industry and the people in the towns and villages of this region. Worthy of note here is the fact that the new route will take the gas over a much shorter route. This will make the new gas pipeline much more efficient than the existing line. It being built with 1.2 meter-diameter pipe designed for higher operating pressures.

Large numbers of workers from special organizations of Glavredazneftegazstroy and its subcontracting organizations from USSR Minneftegazstroy [Ministry of Construction of Petroleum and Gas Industry Enterprises] have been brought in to lay the Gazli-Chimkent gas pipeline. Among the general contractors for the project is SU-2 from the Sredazneftegazstroy Trust located in Chimkent. This organization distinguished itself in its shock effort on the Pavlodar-Chimkent oil pipeline project. And it has continued this pace on the new project here.

"The length of the gas pipeline has been divided into three sections," A. Galinovskiy, the administration's chief engineer on the project, points out by way of introducing us to the work here. "From Gazli to the 100-kilometer mark the steel line is being laid by organizations of the Bukharagazpromstroy Trust. Together with another general contractor, SU-4 from Khiva and a number of subcontracting organizations, are responsible for a great deal of assembly and construction from kilometer 100 to kilometer 437. Then from there, from the Syr-Darya to

Chimkent, our colleagues from Frunze will be finishing the job. They have already begun to take delivery of pipe at their base at Montay-Tash. So that work is soon going to be in full swing here as well."

We recently had the opportunity to visit the site where SU-2 from Chimkent was working on the pipeline. Not far from the railway station at Chardar was the field headquarters of the SU-6 welding and assembly section subcontractors from Sredazneftegazstroy Trust. Next to the mobile units which form the field housing complex rise enormous mountains of long pipe. Here they are welded together in lengths and then transported out to the pipeline construction site and added to the line.

"We have two integrated, multifunction brigades on the job here," V. Pozdnyakov, chief of an assembly and welding section, informs us. "They exceed their norms every day, so this gives the people who follow them a good jump on their own job."

Some 50 kilometers from the pipe-welding site, near the central farm on the Komsomolskiy virgin land sovkhos in Chardarinskiy Rayon, was another complex of mobile field housing units. Workers for SU-2, SU-5 and SU-7 live here. From here the road leads directly to their work site—in the sands of the Kyzyl Kum.

The new pipeline is being under some really difficult conditions. Every sand dune has to be taken by storm, they say here. And they're high out here—they can reach 15 meters. To advance three kilometers, for example, will sometimes require the removal of up to a million cubic meters of material.

An enormous number of pieces of equipment have been brought in here to be used on this project—bulldozers, excavators, scrapers, pipe layers, cranes, pipe string movers and dump trucks. Clearing the way through the sand dunes, the men operating these huge bulldozers open up the path of advance for the rest of the operation. After them come the specialized brigades, which build the road, dig the trench, weld, insulate and then pressure-test the pipe, lay it in the trench and fill the trench back in.

"Twenty-seven kilometers of pipe have now been delivered to the route site," I. Oleynik, chief of the SU-2 section, informs us. "Of this volume, 25 kilometers have already been welded into the line, 20 have been laid in the trench and covered over."

Advancing through the sand dunes from the other end of the 337-kilometer section are the pipe layers of SU-4. The desert gives them no easy time of it. But under the relentless attack of the men and their machines, it has been forced to give way. The steel line is growing longer and longer.

Unfortunately, it has not been possible to get construction of the new gas pipeline under way without the "breakdowns." A. Rogulin, director of the Sredazneftegazstroy trust who had come here on official business, filled us in while we were in Chimkent:

"Construction and assembly train 62 from the Kazakhtransstroy trust is supposed to come in here and build a siding at the Montay-Tash station where cars bringing in pipe for the pipeline can be unloaded. But it hasn't even started on the

job yet. And in the meantime, whole trainloads of pipe are coming in here. The fact is that there is simply no place to put it, and the result is the idling of an enormous volume of rolling stock. What we're afraid of is that the siding will finally be ready when we don't need it anymore. And then there's another hitch: the builders have yet to receive from the customer any planning estimates for the section of the line from the Syr-Darya to Chinkent, and this despite the fact that, and let me underline this once again, the pipe is rolling in here by the trainload. This kind of break in the rhythm of the operation here is something we simply can't put up with."

Yes, the director is right. This important industrial transport link has to come on line on schedule. And this means that we have to get off to a clean, solid start in all operations involved on the project.

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## PIPELINE CONSTRUCTION

### PROGRESS REPORT ON CONSTRUCTION OF KUTAISI-SUKHUMI PIPELINE

Tbilisi ZARYA VOSTOKA in Russian 23 Jun 85 p 1

[Interview with Bakhva Lobzhanidze, chairman of Georgian SSR State Committee on Gasification, and Ivan Zazashvili, deputy director of Gruztransgaz Association, by ZARYA VOSTOKA correspondent Vakhtang Lomtadze; date and place not specified]

[Excerpts] In May last year construction organizations of the Georgian SSR State Committee on Gasification and of the Georgian gas industry transport and delivery association, Gruztransgaz, began work on the Kutaisi-Sukhumi gas pipeline, and this important project is now among those scheduled for early completion.

The social and economic importance of the pipeline for Abkhaziya and a number of other areas of western Georgia and the progress being made on the project was the subject of a conversation our reporter held with Bakhva Lobzhanidze, chairman of the Georgian SSR State Committee on Gasification, and Ivan Zazashvili, deputy director of the Gruztransgaz industrial association.

[Question] Bakhva Fedorovich, tell us something about why the pipeline is being built.

[Answer] For the western part of Georgia and the autonomous republics of Abkhaziya and Adzhariya, where agriculture is the most important economic activity, natural gas is extraordinarily important. In the first place, it is going to help us expand production of subtropical crops, to create lemon groves, among other things, and secondly, it is going to make it possible to save thousands and thousands of cubic meters of valuable types of timber, which would be burned in the winter for fuel. More than that, by going to gas we can clean up the air in the cities in our resort area, relieve the railroad of having to transport a great many tank cars full of fuel oil and help our industry upgrade some of its production processes.

Taking all this into account, one of the points in the CPSU Central Committee and USSR Council of Ministers 1979 decree "Measures to increase production of southern and subtropical crops and accelerate the development of agriculture in the Georgian SSR" calls for the construction of a gas pipeline between Kutaisi and Sukhumi with branches to Batumi and Poti and high-pressure line to provide heat for



the lemon trees and to make it possible to change tea industry enterprises over to natural gas. Plans call for this project to be completed by the end of the current five-year-plan period.

[Question] Ivan Ivanovich, in the case of the construction of this pipeline, the Gruztransgaz industrial association is at one and the same time both customer and general contractor. So, the question to you is what are the technical characteristics of this gas pipeline?

[Answer] Let me please say, first, that this is the first time Georgia has undertaken to build a pipeline this long, 212 kilometers, with its own manpower. It is being welded together from 500- and 700-millimeter diameter pipe and laid across the Kolkhidskaya Plain. There are also water obstacles to be negotiated—the Tekhura, Tskhenistskali, Inguri and other rivers, for example. It runs through the mountains and up and down the slopes of the Khobskiy and Zugdidskiy regions and then runs into particularly difficult terrain problems in the Gulripshskiy area, where it has to go through numerous mountains and gorges.

The pipeline is to cost an estimated 48 million rubles, which includes some 37 million rubles for the basic assembly and construction operations. These figures speak for themselves.

[Question] Bakhva Fedorovich, how is work on the construction of the pipeline going?

[Answer] The line between Kutaisi and Sukhumi is going to come on line by the end of the year, and then next year we'll start work on the branch lines to Poti and Batumi. As far as the long-term future of the pipeline is concerned, plans are calling for it to be extended to Sochi, where natural gas from Maikop comes in.

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## PIPELINE CONSTRUCTION

### BRIEFS

**CASPIAN OIL PIPELINE COMPLETED**—Workers of Kaspornftegazstroy Trust's SMU-3 have completed the laying of a 23-kilometer underwater oil pipeline from Neftyanyye Kamni to No. 3 offshore permanent deepwater platform in the April 28 field. The 500 millimeter-diameter line now runs the whole length of the planned route from No. 3 platform to the combined oil and gas refining center at Neftyanyye Kamni. Up to this point the underwater pipelines and the standpipe had in fact had to be assembled on the sloping deck of the ship. This method required an enormous amount of work—some 15 specially designed pontoons had first to be lowered to the required 120-meter depth; divers then had to attach them to the pipeline, after which the water was pumped out of the pontoons, which then lifted the pipeline off the bottom of the sea. Experts had calculated that it would take at least three months to do this, and then in clear weather to boot. But the Caspian, as everybody knows, does not spoil you with its good weather. Time, on the other hand, was closing in, as they say—there was the new No. 125 well at platform No. 3, at the approach from the drilling site, but the existing line to Neftyanyye Kamni was already carrying its maximum capacity. What is more, it was also going to cost a lot of money—about a million rubles. Let us note here that there was a lot of risk involved in this project, risk that the line would break, like it did two months ago. But the gain in time and money justified the risk. Late last night it was reported to the editors that the new underwater pipeline was now delivering oil from the offshore site to shore. [By A. Donets] [Excerpts] [Baku VYSHKA in Russian 5 Feb 86 p 1] 8963

**NEFTYANYYE KAMNI-ZHILOY PIPELINE COMPLETED**—Baku, 8 Sep 86—The first section of a pipeline from Neftyanyye Kamni to Zhiloy Island, with its 600 millimeter diameter the largest-diameter pipeline in the Caspian, has now been completed. Construction of this line was dictated by the fact that the existing oil pipeline could no longer handle all the oil this pile-supported drilling site was producing. The "open-air" branch of the business, "Kamushkov," has intensifying its efforts of late, not just by the day, but by the hour. Wherever it has drilled it has gotten a gusher. So it has had to rely on help from the tankers. These can now be dispatched to other routes. The pipeline has been laid along the bottom by the economical and efficient method of what is referred to as free submersion. It was first strength-tested on shore, coated with enamel and weighted with concrete ballast in the water to carry it to the bottom. An organization of the Kaspornftegazstroy trust has now begun work on the second section of the line, which will run from Zhiloy Island to Shakhovaya Spit. [Text] [Moscow PRAVDA in Russian 9 Sep 85 p 2] 8963

11 July 1986

**PIPELINE COMPLETE IN KALMYK REPUBLIC**—The gas pipeline from Astrakhan to Kamysn-Burun has now been completed. Beginning in the Astrakhan gas condensate field and ending where it intersects the main line of the North Caucasian system at Stavropol, the new line extends almost 350 kilometers. Construction of the new line within the autonomous republic will take it on in the direction of Iki Burul and Elista. Some 93.2 per cent of the residential housing here has already been supplied with the "blue fuel," and the new five-year-plan period is going to see almost all of it provided with natural gas. Increasing numbers of large production facilities, livestock farms deep in the steppes for example, are going to be heated by this inexpensive fuel. [By V. Oliyanchuk] [Moscow IZVESTIYA in Russian 25 Dec 85 p 1] 8963

**UZHGOROD REPAIR FACILITY OPERATIONAL**—Uzhgorod—The first phase of a central maintenance and repair facility for the Urengoy-Uzhgorod gas pipeline has been completed and made operational. The complex is being built by construction crews from Czechoslovakia. Production is beginning here of gas pumps, compressors and centrifugal expander components for the Yamburg gas field. [Moscow SELSKAYA ZHIZN in Russian 15 Dec 85 p 1] 8963

**YAMBURG-YELETS-1 GAS PIPELINE**—Glavtruboprovodstroy crews are working smoothly and efficiently on the above-plan Yamburg-Yelts-1 gas pipeline. They have now discharged one of their important obligations: they have turned a 410-kilometer stretch of the pipeline over for operation ahead of schedule. It runs through Mordoviya and Gorkiy, Tambov and Lipetsk oblasts. Because all the gas pipelines out of Western Siberia are being laid not all that far from one another, it has been possible to connect individual completed sections of these lines to the existing network of gas pipelines without any delay. The work progress report coming in from the line construction site points to the high levels of performance administration workers are achieving—they have already reached their five-year-plan target. "Glavtruboprovodstroy workers have given a good account of themselves during the Eleventh-Five-Year-Plan period," A. Veselev, deputy minister of oil and gas industry enterprise construction, says. "They have overfulfilled all basic indicator targets: some 16,565 kilometers of pipeline have been laid since 1981, almost 700 kilometers more than called for by the plan. A major effort has gone into the construction of housing: 138,000 m<sup>2</sup> of residential housing have been completed, of which 20,000 are over and above what the plan called for. The increase in labor productivity also surpassed plan targets, reaching 19.4 per cent for the five-year-plan period as a whole. [Moscow IZVESTIYA in Russian 20 Nov 85 p 1] 8963

**NATURAL GAS FOR IZMAIL**—Another blue river has reached the shores of the Danube, a river of gas this time. Ancient Izmail will now be getting natural gas from the Shebelinskoye field. Taking part in the construction of the pipeline were designers and builders from Odessa, Kiev and Simferopol and experts from neighboring Moldaviya. Plans for the future call for the gasification of all residential housing and the largest boiler facilities within the city. [By I. Mirskiy] [Moscow IZVESTIYA in Russian 7 Dec 85 p 1] 8963

11 July 1986

**GAS DELIVERY TARGET EXCEEDED—Ukhta—**Pipeline workers on the Siyaniye Severa gas pipeline have provided users their billionth cubic meter of gas over and above the target for the year. This success is the achievement of the leading enterprises of the Ukhtatransgaz association, among which Compressor Station No. 10 is seen as the No. 1 organization. Not only are shock tempos in the work being achieved here, but economies in the consumption of the "blue fuel," heat and electricity are being chalked up as well. Leading the competition is production compressor mechanic M. Lazarenko. [By V. Kurovskiy] [Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian 29 Sep 85 p 1] 8963

**PUMPING STATION FOR SURGUT OIL—Sverdlovsk Oblast—**Pumping stations along the pipelines transporting "black gold" from Western Siberia to Europe really do remind you of rail terminals where passengers travelling on to other destinations change trains and continue on their way. The Platina pumping station on the Surgut-Polotsk oil pipeline has become another one of these "transfer points" for the oil here. The station is located in the Northern Urals not far from Nizhnyaya Tura. Near the station a large tank farm has appeared. Brigades of construction and assembly workers led by A. Sokolov and P. Legkov of the Ural-metallurgmontazh trust's Nizhnetagil administration put up the three silvery tanks, which are some 60 meters in diameter and about as high as a 7-story building. By using advanced assembly technology the workers were able to put these gigantic tanks up some three months more quickly than this job is usually expected to take and then provide them with the required equipment and control and measuring systems. With their capacity of 50,000 cubic meters each, the tanks at the Platina station are ready to begin receiving oil from Surgut. [By A. Rivkin] [Moscow IZVESTIYA in Russian 15 Dec 85 p 1] 8963

**TRANSCAUCASIAN GAS PIPELINE—Tbilisi—**Correspondent T. Chanturiya informs the editors that construction has begun on the new Northern Caucasus-Transcaucasian gas pipeline. When this line comes on stream it will increase the volume of natural gas supplied to the Transcaucasian republics several times. Strictly speaking, of course, a river of gas has already been flowing south: for more than 20 years now, through the canyons and across the slopes of the Caucasus, it has been bringing millions of cubic meters a day of this precious raw material from the north to the south. But demand has increased. The new gas pipeline is going to have to bring tens of millions of cubic meters over the course of each one of these same days. Some 252 kilometers of the new line are going to run through the mountains. "Project Friendship" is combining the efforts of specialized organizations from a number of republics. The pipeline itself, for example, is going to be built by the Armtransgaz trust, the 12 tunnels through the mountains by Gruzgidroenergostroy and the above-ground and protective structures by special crews from Georgia. The few tens of kilometers of the new line have now been welded. [Moscow IZVESTIYA in Russian 16 Dec 85 p 1] 8963

**ARAL REGION GAS PIPELINE—**The Nukus-Chimbay gas pipeline across the Amu-Darya has now come on stream. The new line will carry gas to the villages and settlements of the Aral Sea region. [Moscow EKONOMICHESKAYA GAZETA in Russian No 38, Sep 85 p 3] 8963



11 July 1986

**NEW BAKU PIPE PLANT**—Baku, 10 Sep—With an "O.K." in hand, the Kaspornettegasstroy trust's Construction and Assembly Administration No. 3 turned over for start-up a new multiprocess facility for producing concrete-covered pipe from 219 to 830 mm in diameter, which the USSR Ministry of the Gas Industry bought from the Dutch Royal Boskales firm. The production facility, which is sited on the grounds of the Azmorneftestroy trust's reinforced concrete works (2.1 hectares), consists of a process line, along which incoming pipe will first undergo hydraulic testing, then shot-blasted, coated with a primer paint, insulated with bitumen or other material, wrapped in the reinforcing mesh and then covered in concrete. The facility has a crushing and sorting system and a unit which prepares the bitumen compound. It can turn out 60 pieces of pipe 11.5 meters long per shift. Plans also call for providing the facility with a capacity for making the large-diameter slings. It should be pointed out here that this plant was built at an accelerated pace, which to no small degree was made possible by the well-coordinated functioning of G. Iskhanyan's combined brigade. Stakhanovite efforts in which they pushed themselves to the max were turned in by fitters M. Alizade, P. Gummetov, I. Konyayev and R. Abdulov and arc welders K. Mamedov and V. Lazarev. The new capacities here will contribute to the success of work on the laying of underwater pipelines in different parts of the Caspian. [V. Goltsev] [Baku VYSHKA in Russian 11 Sep 85 p 1] 8963

**GROZNYI-BUDENNOVSK GASOLINE LINE**—Budennovsk, 20 Dec—A 272-kilometer gasoline line has been laid between Budennovsk and Grozny. It has been designed to provide the Prikumskiy Plastic Works with this raw material. This facility uses low-octane gasoline to make high-density polyethylene, which industry uses as a substitute for metal. The raw material used to be shipped in from Grozny in railroad tank cars. The need for this has now disappeared. The supply and consumption of the gasoline will now be controlled by computer. This is the "regulator" which insures that the line is functioning optimally. Characteristic of the process is the fact that the gasoline is pumped into the line under pressure at the point of supply only, that is, at Grozny. It then flows on its own the rest of the way. The pipeline is remotely monitored and controlled along its full length. It has been designed for many years of operation. Plans call for applying a coating to the line to provide protection against corrosion. The new line will free up hundreds of 60 ton-capacity tank cars each year. According to the computations of the experts, this will generate savings of 1,100,000 rubles. [By V. Pankratov] [Moscow PRAVDA in Russian 21 Dec 85 p 1] 8963

**BACK-UP GAS LINE**—Akhsu-Geokchay-Agdash. This is the route the new back-up gas line for the existing Mozdok—Kazi-Magomed line will take. Over 90 kilometers of the new line will run through the mountains. When it comes on stream, which is scheduled for the first year of the Twelfth Five-Year-Plan period, it will increase the reliability of the main line and, most importantly, will be extended beyond the limits of the republic's cultivated area. [By V. Kovalev] [Excerpts] [Baku BAKINSKIY RABOCHIY in Russian 31 Jan 86 p 2] 8963

**YAMBERG-YELET'S LINE**—Workers on the transcontinental Yamburg-Yelets-1 gas pipeline have achieved a major success. They have passed the "equator" of this 3150-kilometer line. [Text] [Moscow EKONOMICHESKAYA GAZETA in Russian No 30, Jul 85 p 3] 8963

11 July 1986

**ELECTROSTATIC CHARGE PROTECTION**--Scientists at the All-Union Scientific Research Institute of Labor Safety in Tbilisi have developed a device which protects against electrostatic charges. It is designed for use during work on the insulation of the Urengoy-Pomary-Uzhgorod, Central Asia-Center and other important pipelines in the country. By decision of the USSR Ministry for the Construction of Oil and Gas Industry Enterprises, the new neutralizer the Georgian scientists have developed will be used on all new insulating machines. "It was the interest of the customer and his participation in what the scientists were doing during the development stage which made it possible to complete the 'development-introduction-series production' cycle in the shortest possible period of time, and this is being cut to the absolute minimum in this case," says Yu. Tsintsadze, the director of the institute and a USSR State Prize winner. "Experience has shown that the conclusion of production contracts at the level of the ministry, the large enterprise or the countries major institutions helps speed up the process of getting the fruits of scientific research out of the laboratory and onto the production line." Operating on the partnership principle has been successful in putting the products of the laboratory to work more quickly. And this is having no small economic impact. For each ruble we spend we are generating five and one-half in return. [Text] [Tbilisi ZARYA VOSTOKA in Russian 24 Aug 85 p 2] 8963

**FIVE-YEAR PERFORMANCE REPORT**--Completing almost 400 million rubles' worth construction and assembly operations, the USSR Ministry for the Construction of Oil and Gas Industry Enterprises' Krasnodartruboprovodstroy Trust has come in with its end-of-five year plan report. Before the year is out it will have completed another 100 kilometers of pipeline above and beyond the organizations' plan targets. Since the beginning of the five-year-plan period the trust has laid more than 1600 kilometers of fuel pipeline. It has also built 3 compressor and 4 pumping stations plus dozens of other facilities on, among others, the Urengoy-Pomary-Uzhgorod and Yelets-Kursk-Dikanka gas pipelines and the Kholmogory-Klin oil pipeline. [By M. Martynov] [Text] [Moscow STROITELNAYA GAZETA in Russian 13 Nov 85 p 1] 8963

**KHOLMOGORY-KLIN OIL PIPELINE**--Kazan--A critical operation has now been completed on the Kholmogory-Klin oil pipeline, which has begun to carry oil from Tyumen to the Druzhba pipeline. Work on a 2400-meter back-up siphon across the Volga near Kazan has been completed ahead of schedule. For V. Pelipenko, a 1985 USSR State Prize winner and chief engineer for the Kazan Submarine Engineering Administration, this project was something to celebrate: he has now laid a total of 500 thousand meters of pipeline. In a quarter of a century, now, he has many times bridged the Volga, Danube, Kama, Kura, Vyatka or Amu-Darya. This year, Kazan submarine engineers under the direction of V. Pelipenko bridged 15 rivers and laid more than 12 kilometers of pipeline. By the end of the five-year-plan period they will have laid three more siphons, one across the Volga, one across the Vyatka and another across the Ilet on the Yamburg-Yelets-1 gas pipeline, which is scheduled for completion by the opening of the 27th CPSU Congress. [Text] [Moscow SELSKAYA ZHIZN in Russian 1 Dec 85 p 1] 8963

**SIJAZAN-BAKU OIL PIPELINE**--A new pipeline now links the oil fields of Siazan with Baku. The first oil has arrived at the oil refineries of the republic's capital by way of this new steel channel. [Text] [Moscow EKONOMICHESKAYA GAZETA in Russian No 8, Feb 86 p 5] 8963

11 July 1986

**GAS PIPELINE PUMP PRODUCTION**--The Sumskiye Machine-Building Association imeni M. V. Frunze has now completed its year's scheduled production of gas pipeline pumping systems. The one-hundredth and last unit has been shipped out to one of the country's fuel-carrying arteries in full factory readiness. [Text] [Moscow EKONOMICHESKAYA GAZETA in Russian No 45, Nov 85 p 3] 8963

**YAMBURG-YELETS PIPELINE SECTION COMPLETE**--A 149-kilometer section of the Yamburg-Yelets-1 has been linked up with the country's gas pipeline system. Completed ahead of schedule, it runs through Mordovia and the neighboring Gorkiy Oblast. [Text] [Moscow EKONOMICHESKAYA GAZETA in Russian No 45, Nov 85 p 3] 8963

**SAKHALIN-KOMSOMOLSK-NA-AMURE PIPELINE**--Workers building the Sakhalin-Komsomolsk-na-Amure gas pipeline have begun their advance across the mighty Amur: the first several hundred meters of steel pipe have been lowered to the bottom of the river. [Text] [Moscow EKONOMICHESKAYA GAZETA in Russian No 45, Nov 85 p 3] 8963

CSO: 1822/231

GENERAL

PAPER, TASS TOUR WEST SIBERIAN ENERGY SUPPORT FACILITIES

Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian 9, 22, 23, 28 Jan, 1, 9, 12, 14, 18, 22 Feb 86

[Article under the rubric "West Siberia's Oil—a SOTSIALISTICHESKAYA INDUSTRIYA and TASS Action": "The Fields Are Expecting New Equipment"]

[9 Jan 86, p 1]

[Text] The achievements of West Siberia's oilfield workers, as was noted at a meeting of the party's economic activists of Tyumen and Tomsk Oblasts, are consolidating the country's might and accelerating its progress, but failures are making the economy feverish and are slowing that progress. The delay that has been noted in the Tyumen oilfield workers' meeting their goals is creating difficulties for the national economy. One of the basic causes of this state of affairs is failure to supply the oilfields with enough machinery: the machinebuilders have failed the oil-recovery workers.

Under a joint project organized by the newspaper SOTSIALISTICHESKAYA INDUSTRIYA and TASS, the way that West Siberia's oilfield workers carry out their plans and commitments, the reserves for increasing oil recovery, and the way that the long-term commitments of supporting enterprises are being met will be described.

The Borets Plant Sets an Example

Upon returning from a business trip to Tyumen, brigade leader A. Pakhomov of Moscow's Borets plant writes the figure "450" in the official description of the new submerged electrical pump. That is how many days this equipment can work continuously under difficult conditions—a third longer than preceding models. Aleksey Ivanovich, like the workers of many Siberian oilfields, has checked in practice, in the cold and during snowstorms, the quality of his plant's products, which will help to recover raw material.

The Muscovites know, and not through hearsay, how important it is to send reliable equipment to Siberia. Many—engineers, fitters and repairmen—go there to help the drillers to tune the equipment and to assemble the installations. Their Siberian clients need special attention.



At the end of last year, when oilfield workers were experiencing a complicated situation, 175 installations above the plan were manufactured here.

The newest equipment is being installed at the enterprise's production facility. Last year alone 20 NC machine tools were installed, and this year 30 more robotics complexes are to be introduced.

...These machine tools stand in even rows, sparkling with fresh paint and nickel. They are now silent: adjustments are being made. But soon they will start making the pump parts many drill rigs now wait for. The Muscovites' work in supplying oilfield workers with equipment is not limited to this output.

It has been established at the Borets plant: a new task--a new solution. Thus it was, for example, when the oilfield workers urgently needed mobile compressors for forcible oil recovery. In order to speed up execution of the work order, matters were organized this way: experimental models of these machines were sent to Nizhnevartovsk and were proved directly on the spot. The plant received all the data about the equipment's operation by direct communication and responsively improved the design.

As a result, the time taken to create the equipment was reduced severalfold. In a rare case the oilfield workers themselves recommended the equipment for the Emblem of Quality. It was rare, because the machines and instruments that operate in severe Siberia still do not withstand high loadings. Unflattering comments by the operators go to many enterprises. However, as can be seen in the Borets example, reserves for improving the operation can be found, even when under a great workload.

The Ministry of Chemical and Petroleum Machinebuilding, to which the plant belongs, after generalizing the Muscovites' experience, created in the oil-recovery regions groups to check the operation of its equipment. And, what is more, the ministry, at the request of Minnefteprom (Ministry of Petroleum Industry) gave additional orders to its enterprises, including the one at Borets.

This task has been carried out. The northerners are waiting for the new equipment with the capital enterprise's brand.

#### An Optimal Variant

A batch of oilfield equipment was sent to West Siberia from the Baku Machinebuilding Plant imeni Leytenant Shmidt.

The enterprise received a telegram from Tyumen that asked that as much equipment as possible of a shipment that had been planned for the first half of the year be sent in January and February. We should, the northerners wrote, dispatch the machinery from the railroad yards and deliver it to the oilfields before the spring muddy season.

At the plant they found a potential for increasing production of the main type of equipment--christmas trees in the northern version. True, the manufacture of units for other parts of the country had to be reduced, and this diverted the collective from its accustomed rhythm.

"We proceeded to do so, understanding the need for this step," says plant chief engineer M. Baloglanov. "For equipment sent to Tyumen in April and May will lie inert until the 'winter roads' are established. And yet, despite the measures taken, we have not managed to meet the Siberians' request completely. The fact is that we get the quarterly plans for shipping units in centralized fashion, from the Union ministry. And we can alter the shipment of equipment only within the quarter. If we were allowed to plan the shipments, the collective could organize dispatch of the christmas trees under a schedule convenient for the Siberians."

At the plant they definitely know how to do this fully. A draft schedule has been developed here under which, during the second and third quarters, the enterprise will make equipment for the country's southern regions and produce blanks for units used in the north. And in the fourth quarter the machinebuilders will switch over completely to the assembly of christmas trees for Tyumen. Then we shall be able to send to West Siberia a large portion of the equipment at a time convenient for the oilfield workers--in the winter.

Whether this schedule will be implemented will depend greatly upon Minkhimash [Ministry of Petroleum and Chemical Machine Building]. But it should not be forgotten that it will help to solve the problems only if the shipment plan is fulfilled exactly. But failure to meet the goal is still occurring regularly--the enterprise has no few arrears on last year's results. The machinebuilders are correcting the situation by widely introducing new equipment and completely reequipping the production facility.

However, this process is lengthy, and the oilfields need the equipment right now.

#### Partners Are Let Down

The equipment of the subcontracting enterprises--Prokhladnyy's Kavkazkabel plant and the Almet'yevsk Plant for Submerged Electrical Pumps--enables oil to be recovered from great depths, from strata with a low yield.

The bottleneck in the creation of this equipment was for many years the lack of the armored wire that lowers the oil pumps directly into the wells. The Kavkazkabel collective was charged with mastering this production in the middle of the last five-year plan. The oilfield workers' order was filled. Equipment at the plant was modernized, allowing the plant to become the largest shipper of such output for petroleum machinebuilding. And the subcontractors assessed it as being of good quality.

"The Prokhladnyy people are earnest partners," said V. Aksenov, deputy chief designer of the Almet'yevsk plant. "They work without having claims lodged against them, and they ship their output regularly. And the demand for it is growing. Already this year we should produce 480-500 installations monthly for the oilfields."

The era of "golden gushers," of easy oil, as was emphasized at the meeting of the party's economic activists of Tyumen and Tomsk oblasts, has passed

irrevocably. The oilfield workers are penetrating ever deeper into the earth. They are converting to forcible recovery and they are mastering fields with low flow rates. These circumstances place new demands on the wire product. Recent certification confirms that it corresponds to the first quality category. However, this still does not suit either the machinebuilders or the wiremakers, much less the oilfield workers. They are expecting submerged pumps with armored cable--which is stronger and more heat resistant.

"The creation of this important product has been charged to our collective," said I. Peshkov, Director of the VNII [All-Union Scientific-Research Institute] for the Wire Industry. "Unfortunately, much time has been lost. TASHNIKI [Tashkent Scientific and Design-Development Institute], which belongs to Sredazkabel [Central Asia Wire Production Association], has literally made a mess of developing the product."

The guilty have been punished severely. Now our collective is compelled to rush the research. We made test models in a short time, with great strain, at the price of taking specialists away from other tasks. They are operating successfully at Siberia's oilfields. One can state with assurance: the oilfield workers will this year also receive the serially produced product, whose output has been mastered by Minelektrotekhprom [Ministry of Electrical Equipment] plants. But neither is this process occurring smoothly. The shippers of armoring tape and ethylene-propylene rubber--USSR Minchermet [Ministry of Ferrous Metallurgy] and US Minneftekhimprom--are failing us. Our work depends greatly upon fulfillment of their commitments.

#### Reliability Is the Concern.

At the request of West Siberian oilfield workers, the collective of the Volgograd Drilling-Equipment Plant is increasing 2½-fold this year the output of installations for cluster-well drilling. Several wells have been sunk by these powerful units. This equipment is delivered to the fields in large modules, greatly accelerating and facilitating their erection.

In order to fill the Siberians' work orders, the plant's collective has reviewed the original plans. Competition to fill the important order was promoted in the enterprise's departments from the very first work shift of the new year.

The introduction of new equipment in many departments is also promoting acceleration of the work. For example, five robotized complexes have begun to operate and the number of machine tools with program control has risen at the enterprise. This will permit the oilfield workers' orders to be filled without increasing the number of workers.

"We are paying special attention," says plant director V. Pichurin, "to the reliability of the drilling equipment. Because the people who have to drill into the earth on the basis of our installations have to work in Siberia.

"After considering the climate of the oil patch, we have decided to produce all installations in the first quarter, so they can be delivered over the icebound frozen ground. We hope that this time the railroaders will not let

us down. For, in order to deliver each drill rig, no fewer than 20 freight cars are required, and they are not always delivered to us on time. This is precisely why not all of the December orders have even been shipped. But we are trying to establish firmer links with the railroad."

#### The Deputy Minister of Petroleum Industry V. Sokolov Comments on These Reports

"Our branch is the main client for the equipment that these enterprises produce. The output at many fields depends upon their work, upon observance of the shipment dates. Moscow's Borets plant, the Kavkazkabel plant and the Al-metyevsk Submerged Electrical-Pump Plant, and the Volgograd Drilling-Equipment Plant, which the journalists reported on, actually are filling all the orders completely and even additional orders. But the main suppliers of equipment for our industry--Azerbaijan's machinebuilding plants--violate the schedules for shipping equipment with alarming regularity. What is more, the quality of their machines leaves much to be desired.

"Thus, last year alone they fell short more than 30 units for repairing wells, more than 112 pumping jacks and other equipment. These plants especially have failed the Siberians: tens of units for mechanizing the labor-intensive work of servicing the wells have not been received at Tyumen. One scarcely needs a reminder about the difficult conditions under which the oilfield workers there are working and how badly they need these machines.

"A radical restructuring of the work is necessary for correcting the situation."

[Article by V. Korsh (Baku) under the rubric "West Siberia's Oil--a SOTSIALISTICHESKAYA INDUSTRIYA and TASS Action": "Quality Based upon Verification"]

[22 Jan 86, p 1]

[Text] Tyumen oilfield workers are failing to meet their goals, creating difficulties for the national economy. They have proved to be unready for converting to forcible recovery of valuable raw material and for operation under new and more difficult conditions. Because of unsatisfactory work by the machinebuilders, progressive methods for the mechanized extraction of crude is being introduced slowly.

#### Break the Vicious Circle

Baku Plant imeni Leytenant Shmidt machinebuilders have been enabled to increase the production of cast blanks for oilfield equipment. The erection of new furnaces in the castings department has been completed. They replaced the old units, which had been in operation here for more than 13 years.

However, the new equipment still has not raised the quality of the castings. Claims from West Siberia's Noyabrskneftegaz [Noyabrsk Oil and Gas Production Association] come to the plant. The oilfield workers present justified complaints about the christmas trees and a number of other types of equipment in which castings are used.



Incidentally, this is not the only trouble. Crash work caused by failures in the delivery of outfitting parts and components interferes with the quality factor in manufacture of the equipment.

"In order to improve the situation in oilfield-equipment quality," said plant director I. Guseynov, "the common efforts of all Soyuzneftemash [All-Union Association for Oil Machinebuilding] enterprises and of all plants associated with us is necessary. A system for quality control was developed at our enterprise last year. We introduced monitoring of each operation in the manufacturing cycle and even opened up a permanent OTK [technical inspection section] post at which representatives of Tyumen's oilfield workers stand guard. The system worked with fair precision until the subcontractors failed us. The Baku Machinebuilding Plants imeni S. M. Kirov and imeni P. Montin shipped parts and blanks irregularly. As a rule, 25-30 percent of all the parts due arrived during the first two 10-day periods of the month, then up to 70 percent in the last 10-day period."

And the Shmidt plant subcontractors are failing us this year. Judge for yourself: one of the most important types of equipment the Plant imeni leytenant Shmidt produces is the so-called casing-string head, in which filters are installed that let crude pass from the strata. Lowered into the hole at the end of the string, they are constantly subjected to the effects of an aggressive medium and they often stop working. Oilfield workers in all parts of the country are asking that the quality of this equipment be raised, and the plant is doing much to this end. However, the collective's efforts have again been brought to naught: of the 65 string-head housings that arrived from the Baku Steel-Castings Plant during the first 10 days of January, 18 had to be rejected. As a result, the rhythm was broken and there were losses.

But, of course, not just one subcontractor is guilty. There are also maladjustments in organizing the work at the Plant imeni Shmidt. Idle time occurs here often because of poor work by the repair service. The machine-builders' rhythm often is broken because of inadequately effective use of the new equipment.

But the rhythmicity of the plant's work is, in its turn, telling on the work of the republic's other enterprises. For it also is a subcontractor. How to break out of the vicious cycle? First of all, Shmidt plant workers consider, with the help of new equipment, which must be mastered soon at all the industry's enterprises. Since the start of the year, two robotized complexes for lathe machining of parts have arrived for work in the NC machine-tool section and have gone into operation. This has enabled the quality of certain types of equipment to be improved and the production of spare parts for christmas trees to be increased. It is to be hoped that Shmidt plant workers will correct the situation also in regard to casting. The new furnaces will enable blank output to be increased. The equipment made from them will be assembled during the first two 10-day periods of the month, and during the third 10-day period the plant will start to work on blanks that have arrived under cooperative arrangements. The rhythm will become more precise.

Deputy Minister of Petroleum Industry V. Sokolov Comments

It is completely natural that the journalists have called attention to Azerbaijan's machinebuilding plants--these enterprises ship almost 70 percent of the oilfield workers' equipment. It is encouraging that certain types of their equipment are as good as their best foreign counterparts. Unfortunately, this is only a drop in a sea of machines, components and parts that our oilfields need badly.

The Bakinskiy Rabochiy plant is producing, along with the pumping jacks that have so successfully passed certification for the highest quality category, machines for the same purpose but under a different brand. So it was that these units were deprived of the Emblem of Quality in 1984 and they are still in the lowest category.

The general picture for shipments for the last quarter of last year appears to be still more alarming. After the plant OTK's had given their release to many parts and machines (they shipped us 2,146 units of equipment), 762 had to be returned because of serious defects. These and 20 of 51 UPTI-50 units for well repair from the Plant imeni Leytenant Shmidt were rejected, 331 out of 751 pumping jacks from the Bakinskiy Rabochiy plant were returned for further work, 201 out of 768 reduction gears from the Kishla plant did not meet the standard, and 51 of 79 gear boxes from the Plant imeni Lenin were of low quality.

In order to correct the situation somehow--previous measures did not help--we went to an extreme: we sent our commission on equipment-receiving to the Baku enterprises.

This practice got action for a while. But here also our suppliers found a "way out." Each night, bypassing client monitoring, freight cars with the rejected output left secretly from the spur tracks. Bakinskiy Rabochiy sent out 82 units of equipment this way, the Plants imeni Lenin and imeni Kasimov 27 gear boxes and 11 flushing units.

How can the enterprise speak about honor? In finding such "reserves," the supervisors of these enterprises gave their collectives examples of a lack of discipline and a lack of honor in their relationships with other enterprises. But up in the North, such "enterprisingness" can cause mishaps or accidents at a well, when, in severe cold, far from civilization, people will rectify the job that the Baku workers did not complete. The CPSU Central Committee Politburo paid special attention at a recent meeting to output quality. This problem is especially urgent now. Actually, the concepts of workers' honor and quality should be indivisible. For example, when we offer oilfield workers Baku-made units for well repair, they categorically refuse them and ask for machines from the Leningrad Machinebuilding Plant, whose workers can justly be proud of their output.

Right now certain achievements in the work of various enterprises can be noted. I recently visited the Plant imeni Leytenant Shmidt. It should be noted that it had raised the reliability of its deep pumps, and modern equipment was being introduced for producing many units, although some machines are

being assembled almost in the enterprise's backyard. But even in the new departments, poor equipment is still being produced. Minkhimmash [Ministry of Chemical and Petroleum Machine Building], to which all the enumerated plants belong, tried to solve the problems in various ways--the management was changed, and production facilities were rebuilt. We are awaiting the results. And we are not simply waiting--we have offered counterproposals. For example, USSR Gosstandart [State Standards Committee] has presented specific breakdowns and plans for measures for organizing strict monitoring over the quality of shipments. Appropriate measures have been adopted under which Gosstandart posts are to be organized at each enterprise.

Gosstandart representatives, unlike our workers, have the authority and the right to impose economic and administrative penalties against negligent suppliers. They should have been at work since 1 January. But this commitment was not met and, as before, freight cars with rejectable output sometimes go to the oilfield workers at night. The red light of exactingness and discipline must be lit quickly for them.

[Article by Special Correspondent V. Pryadko (Nikopol) under the rubric "West Siberia's Oil--a SOTSIALISTICHESKAYA INDUSTRIYA and TASS Action": "Excuses Will Not Help the Job"]

[23 Jan 86 p 1]

[Text] "The poor quality of our pipe?" senior foreman V. Savchenko asked again. "Well, indeed...."

He had plunged into the argument, but suddenly stopped in midsentence and waved his arms decisively:

"Let's go to the department. To our finishing activity."

An enormous department, it seemed literally clogged with equipment. But you take a look, and there is nothing superfluous. Automated machine tools are joined together by a complicated system of conveyors which the plant's skilled craftsmen created, laying the manual labor on the machines' shoulders. Now the manufactured couplings, the safety devices--the rings and nipples themselves--"arrive" at the place where the workers, using special equipment, screw them to the pipes, having first wound the thread with a packing film. This is a conveyORIZED system, with numerous turns and bends that are regulated by mechanisms, and the impression of an "overload" is created.

The senior foremen steps with large strides, persistently bending down. I barely managed to keep up with him. In his very small office, Vladimir Vasilyevich takes from a file a paper "sheet" strewn with figures and puts it on the table.

"Here," he says, "you see? This is the rejection journal, sent to us from Surgutneftegaz [Surgut Oil and Gas Recovery Administration]. See, we have the smallest percentage of rejects."

I read: Nikopol's Southern Pipe Plant--3.2 percent. And alongside are listed the Azerbaijan Pipe-rolling Plant, which has this vexing indicator of 13.2 percent. Still higher are the Taganrogers--16.5 percent. Of course, in comparison with others....

"This reassures you?"

"Not at all, of course," the foreman began, ill at ease; he drew on his cigarette and took a puff. "This small percent of ours nevertheless conceals a sizable 2½ thousand tons plus. We sent Tyumen's oil and gasfield workers, in all, more than 77,000 tons of pipe. What caused the rejection? Judging by the oilfield workers' comments, protective parts were unreliable, so during haulage the threads on some pipes were damaged. And in the North you do not cut new threads all over again."

Vladimir Vasilyevich fell silent for a moment, then said with bitterness:

"Right now we are rebuilding, without stopping production. We have installed NC machine tools, which we are mastering successfully. The equipment for cutting the couplings is excellent. But again, we have to manufacture the protective rings and nipples on those same machine tools of the Tbilisi Machine-Toolmaking Plant that have been criticized more than once in the press. We get a trifling amount: here we fish for microns in cutting the threads, but we wind on a poor ring and nipple for protection. And this is how we damage the pipe. And this is not our only trouble. At all plants that produce pipe, we make the protective parts with whatever is at hand, on antediluvian, obsolete equipment. Indeed their quality should be just as high as that of the couplings."

The quality of casing worries not only the senior foreman of the finishing work. We spoke about this also with chief of the second pipe department, V. Andryushchenko, who took over 2 months ago, with plant chief engineer A. Silchenko, and with many specialists. First Secretary of the Nikopol City Party Committee A. Gontarenko is constantly busy with this subject also. Recently here, at the enterprise, an on-site meeting of the party city committee bureau convened at the enterprise, examining problems of the quality of pipe produced, the rebuilding of the enterprise, and promotion of the competition for successful fulfillment of the pre-congress commitments. This was a mobilizing factor for the pipemakers' collective. The first month of the new year they began rhythmically, and, in regard to casing, they are going ahead of schedule by almost a thousand tons.

Nikopol's metallurgy workers consider pipe production for Tyumen's oilfield workers a matter of honor. Altogether they produced 132,000 tons, in all, of casing last year. It would have been possible to praise them, but one cannot bring oneself to do so. For the pipe was delivered irregularly, and there were especially great delays in the second and third quarters. They fell short by 5,000 tons of pipe, which had to be made up in the last 3 months of the year. Of course, this crash work was echoed at West Siberia's oilfields, and inconsistency of recovery increased at the northern fields.



The Nikopolites also have their complaints against the Dneprovsk Metallurgical Combine imeni Dzerzhinsk—it shipped skelp to them. And this skelp, let us say it frankly, was not of high quality, and it arrived irregularly, although the enterprises are not far apart.

Last year the Nikopol pipeworkers rejected 5,500 tons of skelp worth a total of 1.7 million rubles. And even in the metal accepted, defects were found in rolling, and they produced 18,000 tons of pipe that had not been ordered (that is, of low quality).

Indeed, both collectives have an agreement for socialist competition: the pipemakers of the second department and the workers of the new Dzerzhinsk rolling department concluded it. They go to each other's facilities, check competition progress and call upon the subcontractors to strictly observe the shipments schedule. But, as is apparent, the competitors' words still differ from their actions.

From the editor. A working correspondents' post of the newspaper SOTSIALISTICHESKAYA INDUSTRIYA, TASS and the city's People's Control Committee, which will follow up on the strict fulfillment of the oilfield workers of the West Siberian complex, has been established at the Nikopol Southern Pipe Plant.

[Article by Ya. Ali-Zade, G. Bazhutin, Yu. Belanov, V. Zhilyakov and V. Kremer (Nizhnevartovsk-Tyumen) under the rubric "West Siberia's Oil—a SOTSIALISTICHESKAYA INDUSTRIYA and TASS Action": "Samotlor's Acute Angles"]

[28 Jan 86, p 1]

[Text] The SOTSIALISTICHESKAYA INDUSTRIYA editorial board and TASS are waiting for an answer:

From the Ministry of Petroleum Industry V. Dinkov:

"What steps is the industry's staff taking to bring an important reserve into action more quickly, to put back into operation the West Siberian wells that have been idled?"

From the Ministry of Chemical and Petroleum Machine Building V. Lukyanenko:

"Samotlor's oilfield workers are in acute need of highly productive submerged electrical installations. What is being done to eliminate the shortage of them?"

From the Ministry of Construction of Petroleum and Gas Industry Enterprises V. Chirskov:

"What has been initiated specifically to speed up the construction of gaslift facilities at fields of the Tyumen North?"

Tyumen's oilfield workers are experiencing a period of complicated restructuring. The time of the "golden" thousand-tonner flowing wells and the era of easy oil are a matter of history. It seems that the country not so long ago was applauding the precipitate take-off of the workers of the legendary Samotlor, while today it is they who head the list of those in arrears in Glavtyumenneftegaz [Main Administration for the Oil and Gas Industry in Tyumen Oblast]. Operation under the new conditions has demanded a radical restructuring of the oilfields, the introduction of supplemental capacity, and a rejection of obsolete models of management. All the acute problems of West Siberia's oil-recovery workers are converging on the unique field today, as if being brought into focus.

Our first meeting was with Sergey Viktorovich Muravlenko, son of a well-known Siberian oilfield worker. The younger Muravlenko right now heads the best of the five recovery administrations that are operating at Samotlor.

But the chief of the NGDU [Oil and Gas Recovery Administration] of Belozerneft [Belozersk Oil Recovery Administration] did not converse about the collective's successes and achievements. He detailed a fresh summary of current operations and marked the total for the first 10 days of January: minus 71,438 tons. The result, honestly speaking, was unexpected, for we thought we would have become acquainted with advanced experience....

"No, we had no extraordinary circumstances," said Muravlenko. "Take a look at the other figures. The daily plan for December was 51,000 tons, for January 62,000 tons. In comparison with December we recovered 300 more tons of crude per day, but it is still far from the plan figure, as you see. We were leaders, we became laggards. This is our arithmetic. That which was good yesterday is inadequate today.

"The prerequisites for increasing recovery are not easy. The flow rate of the wells has been reduced and, at the same time, they are yielding increasing amounts of water along with the crude. Nine out of 10 of the existing bores have been transferred to the forcible, mechanized method of operation. The time has come to master comparatively poor strata and the intercalations on the flanks."

The task has been posed this way: open up Samotlor's second wind and halt its downward slide.

"There is such a possibility," considers chief of the Development Department of the Siberian NII [Scientific-Research Institute] of the Oil Industry V. Revenko. "It is necessary to increase withdrawal from the water-and-oil formations and to require that the drowned wells be operated more intensely and that the amounts of drilling at poorly production sections be increased. This will not lead to damage to the field but, on the contrary, it will put it to use."

Right now the main thing is to transfer the center of gravity to operation with the well inventory, to provide for maximum yield from the capacity under recovery. But work under the plan is still moving basically along a well-beaten path. We saw at the association, the fields and the brigades a

multitude of identically titled papers: "Measures for Providing for the Planned Level of Recovery." These papers are in continuous motion. They are reviewed at various levels, repeatedly returned for refinement, supplemented with ever newer provisos, and defended at commission meetings.

"The association tightened up the first three versions of the measures," says S. Muravlenko. "Now an additional proviso has been included: add 102 well-repair brigades to the existing 15."

"Why not an even 100?"

"We considered everything: otherwise, in the final analysis, it will not mesh."

I doubt whether S. Muravlenko can seriously suppose that in the next few days an army of qualified workers will descend upon him and the equipment they need will arrive. But what will you do here? Otherwise the measures will be returned again as inadequate....

The measures that come from the field converge as one on the main administration and the ministry, creating an appearance of a seething drive for plan fulfillment. The paper streams raise fusses in the offices, but Samotlor's stream of crude does not grow fatter.

The file folders swell especially rapidly after the next commission visit to Samotlor. Last year 291 commissions visited the Nizhnevartovsk association.

"We spent practically all of last year explaining the causes of the lag, arguments and persuasion," General Director L. Filimonov of Nizhnevartovsk-neftegaz [Nizhnevartovsk Oil and Gas Recovery Association] frankly admitted. "And only now are we trying to adjust matters correctly. But the work ahead is unknown territory; Samotlor is, in essence, only now being established as a mechanized field."

The first steps have been taken in this direction. Excessive centralization of auxiliary services that were not justified at the mechanized recovery stage have been eliminated. They were brought closer to production and were subordinated directly to the supervisors of the oil-and-gas recovery administrations. Parking lots at the fields have been equipped for operating transport. Now it is not necessary to drive thousands of heavy vehicles daily from Nizhnevartovsk to the field, losing valuable time and burning fuel uselessly. Support centers for oil-recovery brigades--small repair shops, personal amenity facilities, dining rooms, and reading and recreation rooms--have been set up at the fields. But this is extremely little for reliable, steady operation of the fields. Buildup of the unique field has lagged for several years behind the oil-recovery level. And the fact that Samotlor has already passed its peak by no means alleviates--it only heightens--the problem.

For right now, not only must the new facilities, which had been postponed for later on, be erected, but those built 10-15 years ago must be replaced or rebuilt.

We became convinced that much fuel is being lost at Samotlor because of frequent accidents in the oil-gathering grids. First at one section, then another, old field pipelines broke. At times the association has fallen short thousands of tons per day for this reason. And this is still a reserve for reaching plan goals.

According to the consultants' assessments, 870 km of oil pipelines urgently need replacement. The recovery administration's forces are not coping with this much work. The association has appealed to the main administration for help. The main administration has appealed to the ministry. Minnefteprom [Ministry of Petroleum Industry] took a broader look at the problem. An order was issued to create at Nizhnevartovsk a specialized trust for repairing field pipelines, tank farms and power lines at the fields.

The trust was established back in March of last year. We are asking its manager, N. Remezov, what it had succeeded in doing.

"Unfortunately, very little. Last year we had to repair, in all, just 56 km, but we did not even do that. Now the program has been increased 10-fold. How is this to be done if, under this plan, we have only half the people, and, what is more, they are not given complete workloads? Equipment availability is 15 percent. There are not enough excavators, bulldozers, pipelayers and welding equipment. You can record it frankly like this: the trust has been created just on paper."

In just about the same way, another problem most important for Samotlor is being resolved half-heartedly--expansion of the gaslift recovery method. Today, the specialists tell us, those enormous amounts of liquid that are necessary for intensifying oil recovery can be collected from the ground only by that means.

When introducing this progressive method, they at first put reliance on imported equipment. That was done in order to give the machinebuilders time, based upon that assumption, to gain momentum and, as a consequence, to convert to the erection of compressor stations equipped with domestic units. Minkhimmash [Ministry of Chemical and Petroleum Machinebuilding] enterprises failed this important task. Out of 12 gaslift stations which already should be operating at the field, only one has been built. What is more, that one proved to have been built imperfectly. And so now, in the second year, the oilfield workers are slaving with it: it works a day, it stops a day.

Further expansion of the gaslift method now is linked with the construction of automated compressor stations in an outfitted-module version, with units of increased power and reliability. The first of these should go into operation in the third quarter of 1987. This design was reinforced by an order of the six interested ministries. Monitoring fulfillment of the order was vested in the Deputy Ministers of Petroleum Industry V. Grayfer and of Chemical and Petroleum Machine Building V. Reznichenko. In brief, this time the matter was placed on a firm basis.

The realisticness of the dates named, however, provokes doubts. And here is why. Minneftegazstroy [Ministry of Construction of Petroleum and Gas Industry Enterprises] planned for the general contracting trust



Samotlorneftepromstroy [Trust for the Construction of Oil Industry Facilities at Samotlor] only 200,000 rubles--4 percent of the total volume of construction and installing work at the facility for the whole current year. All the rest will go to the brief startup period.

The oilfield workers' attitude toward gaslift is unanimous: only by speeding up scientific and technical progress can the industry come up to the advanced goals. But when we spoke about this at Samotlor, we often heard: "That's it. Until then, we will have to twist the pipe by hand. This is the Stone Age."

Yes, there is still much manual labor at the country's main oilfield. At foreman Sh. Zalbekov's brigade we happened to see two workers trying to disconnect a pipe raised from the depths with a heavy chain wrench. The thread did not give way at all. Then, throwing away the unnecessary tool, one of them picked up a sledgehammer. It took half an hour to make only one turn of the pipe. And there are about 200 of these in the hole. This operation can be performed in mere minutes by means of a simple piece of underground repair equipment (APR). And here is the trouble: a mechanism well known to well repairers somehow has been a rarity at Samotlor and other Tyumen fields for a long time. Thus another piece of equipment which, on the whole, is uncomplicated and was mastered by our industry long ago, has got into the scarce category. We found out with surprise about a severe lack of the simplest instruments: echo sounders--for determining the dynamic level of the liquid in the well, and dynamographs--for determining the operating condition of the sucker-rod pump.

"There is a myth about the reequipping of Siberian fields," chief of Field Facilities No 1 of NGDU Priobneft [Ob Region Oil Recovery Association] Yu. Uryadov enlightened us. "Actually, we are allocated many machines and much equipment, and many of our orders are carried out first priority. But, in so doing, no one considers that, with the conversion of Samotlor to mechanical recovery, our requirements have risen severalfold. Neither the ministry nor the planning or supply organs take this into consideration."

The next day after the conversation with Yu. Uryadov, we attended a teleconference that was conducted from Moscow by the Ministry of Petroleum Industry, V. Dinkov. "There is no basis for complaining today about the supplying of materials and equipment. The oilfield workers are given everything," he said, addressing the supervisors of Glavtyumenneftegaz subunits. It is difficult, naturally, for us to judge whose words correspond most to the actual state of affairs--the chief of the oilfield, or the ministry. But one thing is completely undisputable: in determining the actual requirements of West Siberia's workers for various types of vehicles and equipment, the most complete chaos reigns.

The most conspicuous example is a highly productive submerged electrical installation--it yields 700 or more cubic meters of liquid per day. How many of them are needed to provide for stable operation at Samotlor? According to the association's computations, the requirement for this year is 270 units. The main administration formalized an order for 345 installations. The ministry considered that this was overstated and allocated funds for...

30 units. Just try now to find out where these figures came from. Yet recovery has been assigned and the plan constructed on the basis of them.

The most acute of Samotlor's angles are the idle wells. It is sickening to see pumping jacks motionless and gathering lines cold and covered with snow. In the full sense of the word, enormous assets have been frozen. Many wells do not produce for several months and even years, and some of them cannot be rejuvenated now. And this at a time when new ones are being drilled alongside them, to recover crude.

Everyone with whom we spoke understood: it is necessary get this most important reserve as quickly as possible. Back at the start of last year tens of brigades from the country's various oil regions were sent to Samotlor with a specific task: to introduce idled wells. But, unfortunately, they did not manage this assistance in a businesslike fashion.

The collectives did return no few bores to operation. But the nonoperating inventory was, in so doing, not reduced, but more than doubled, and it is now more than 1,300 wells. This paradox is easily explained: the basic emphasis was placed upon quantity to the detriment of quality. Often the wells went out of operation after repair, after serving half of the prescribed period.

Not one of the Siberian fields was born easily. It is difficult to put the new mechanized Samotlor on its feet. Precise rhythm of its operation depends upon those who today are enduring a difficult labor drive at the oilfields and upon those who are called upon to provide the oilfield workers with everything necessary.

[Article by Ya. Ali-Zade, G. Bazhutin, Yu. Belanov, V. Zhilyakov and V. Kremer (Nizhnevartovsk-Noyabrsk-Surgut) under the rubric "West Siberia's Oil--a SOTSIALISTICHESKAYA INDUSTRIYA and TASS Action": "What the Oilfield Starts With"]

[1 Feb 86, pp 1, 2]

[Text] The SOTSIALISTICHESKAYA INDUSTRIYA editorial board and TASS are waiting for an answer:

From Deputy USSR Gosplan Chairman N. Lebedinskiy:

"How is the role of the Territorial Interagency Commission on Problems of Developing the West Siberian Oil and Gas Complex under USSR Gosplan to be raised in coordinating the plans of the workers together with the oil-recovery workers of the related ministries?"

From the Ministry of Transport Construction V. Brezhnev:

"What steps is the industry's staff taking to accelerate the laying of roads for year-round operation to the new oilfields of Tyumen's North?"

From the Deputy Minister of Chemical and Petroleum Machine Building V. Reznichenko:

"The dates of delivery of equipment must be moved up for successful development of the new oilfields. How is this task being solved?"

In our conversations with Tyumen's oil-recovery workers we more than once heard this: today's lag is caused to a great extent by the slow development of the new underground stores. The strenuous plans for current recovery have not been reinforced by the introduction of "fresh" reserves. Miscalculation at a strategically important section caused losses of time and led to an overloading of the operating fields.

A strict assessment, based upon the fundamentals, of this shortsighted policy of industry and Glavtyumenneftegaz [Main Administration for Oil and Gas Recovery in Tyumen Oblast] supervisors was sounded at the meeting of the party's economic activists of Tyumen and Tomsk Oblasts. Did they learn the necessary lessons from the criticism?

The main administration reported to us: 14 new fields were put into operation in 1985, almost 1½-fold more than during all the preceding years of the last five-year plan. Now the Siberians plan to plug in another 18 to the oil-gathering grids and to introduce an average of 15 of the oil storages annually during the whole five-year plan.

The figures cited leave no doubts: a decisive policy for the accelerated introduction of new fields has been adopted.

We visited the regions of the new conquest and became acquainted with the local state of affairs.

Noyabrsk has a special place among the new cities of Siberia. It rightly considers itself an outpost in the campaign for the Arctic's oil. Noyabrsk-neftegaz [Noyabrsk Oil and Gas Recovery Association] has become the firstling of the oil industry in the Yamalo-Nenets Autonomous Okrug.

"The new areas are for us not only an assurance for tomorrow but also, as they say, our daily bread," explains association general V. Gorodilov.

"This year we should increase fuel recovery by more than 11 million tons. And we are counting on getting the whole increment from the young storehouses."

Foreman V. Arkhipov's brigade from the Belorussian UBR [Drilling Administration] has just now completed, with a substantial speedup, the sinking of the next deep well at the Pogranichnyy field, which was put into operation last year. The Belorussian drillers were settled here last spring, the main forces having been hurried from Nizhnevartovsk to the growing, promising region. In a short time 10 brigades were activated at the new place and more than 40 wells touched down under complicated geological conditions. Precise interaction with the builders and the gas-recovery workers, who

simultaneously provided them with a front for operations, helped in the accomplishment of the efficient maneuver.

Concentrating the forces of those who penetrate the earth's depths yielded a positive result. Last year more than 200,000 tons of crude were obtained from here. This year 10 times as much is to be recovered. And such a task, we were assured, was within the young field's capabilities.

"The record of Pogranichnyy has been a success story from the beginning," First Secretary of the Noyabrsk Gorkom Party V. Shestakov considers, "for it was turned over for test operation a month ahead of time. And the collaboration of the supporting entities played a decisive role here. And it is precisely in this sphere, in my view, that reserves for the rapid establishment of new fields must be sought."

How, actually, is an oilfield started? With drilling of the well, the uninitiated ready will at once reply. And he is mistaken. Because a very important step--the preparatory step--should precede the drillers' appearance on the platform. It includes the development of design and budget-estimating papers, the laying of roads and power lines, the dumping of fill for the cluster wells, and erection of the initial field facilities. Consequently, an accurate "scenario" that determines the compatibility of the actions and interests of the participants and the sequence of performing the operations is needed. The oil-recovery enterprise has been assigned the functions of the "director."

Local party organs have until now been compelled, as a rule, to assume this role. That's how it was during development of the Pogranichnyy, where, with the help of the party's city committee, they managed to mate and assemble the subunits of the various ministries into a single fist. And many other local oilfields were started up here this same way. For example, in the Surgut area, a coordinated schedule signed off by all the contractors was developed and, the main thing, was realized. It was thanks to this formulation that the job was speeded up at the East Surgut and West Surgut fields. This is how the Rodnikovoye field, which the allied workers have committed themselves to turning over by the opening of the 27th CPSU Congress, is being developed today.

However, examples of coordinated, friendly work are usually not the rule but the exception. They do not, unfortunately, determine the approach to solution of the tasks that are strategically important for oilfield workers of Tyumen's North.

The Yershovoye field--one of the satellites of the celebrated Samotlor--was uncomfortable, like its name ["the wire-brush field"]. It was planned to turn the field over and obtain thousands of tons of crude last year. The planned deadline for startup was missed. Can the lost time be made up now? Avoiding a direct answer, administration chief engineer of Belozerneft [Belozner Oil Recovery Association] G. Orlov, proposed that the facility be visited.

We are riding over a bumpy winter road and we discuss the problem of roads. It is precisely their absence, in the chief engineer's opinion, that is the



main cause of all the complications. And it is difficult not to agree with this. The winter road has long not been in operation, and with the arrival of warm days at Yershov one can get there only by helicopter. Indisputably, a road usable the year round is needed.

The design called for laying a two-way route. The decision was justified and rational: the future oilfield will be connected with the highway and with the navigable Bakh river.

However, with two meeting flowline construction groups moving in opposite directions, the roadbuilders managed by the end of the year to turn over for operation only 14 of 46 kilometers of concrete road on one section and half of 10 on the other. This means that the road will come to a halt in the swamps, and, with the closing of the winter roads, the oilfield workers will mark time. A deadend variant? By no means--it is the simplest problem for a schoolchild. And the client solved it himself.

"We proposed to the roadbuilders," says G. Orlov, "that they build the two shoulders of concrete road. And to lay, for the time being, only the 15-kilometer route from the Vakh River."

Such a variant at first glance will satisfy both the oilfield workers and the roadbuilders. What kind of objections can there be to this? There are none. The contractor, Belneftegazstroy [Belorussian Trust for the Construction of Oil and Gas Field Facilities], agreed in principle with the proposed variant, but the agreement said: "The deadline for completion of the work is the fourth quarter."

It is known that oral assurances are not written commitments. The roadbuilders wanted to "play it safe," "to insure themselves" against every circumstance, thereby putting the success of the whole matter in doubt. And there is a basis for doubts. At any rate, senior superintendent V. Gerasimov considers that, clearly, it cannot be coped with prior to April, when the winter road "takes a swim."

We proceed along the winter road. A pioneer settlement greets us with trailer housing of various gages, which are strewn about in disorderly fashion. G. Orlov, as they say, joined in directly upon arrival in solving the housing problem--it was used for quartering recruits. It was ordered that they be housed temporarily in the trailers, which had been allocated as a reading and recreation room.

"People arrive in increasing numbers, but there is no place to settle them," he said, as though to justify himself.

Why is there a problem with housing? For just a slight distance away, in the very center of the settlement, rises a building, a standard Vakhta-80 dormitory, which is well known to Siberians. It was erected by Samotlorneftepromstroy [Trust for the Construction of Oil Industry Facilities at Samotlor], back at the start of last year and was turned over to the client... "lock and key."

"It cannot be occupied," Orlov explains, "there is no heating. And it is forbidden to refuse it--they should have realized that such an unoccupied building...."

So it is that a nice dormitory, new and spick and span, stands idle at a time when people are cooped up in huts on skids. Incidentally, representatives of the trust have their ironclad arguments. The designers called for installation of a boilerhouse with a Finnish heating unit. However, the imported boiler did not turn out to be available, so another was imported, and a new scheme was needed for it, a new footing. They began to construct the new footing, but here nature's clockwork was functioning with precision. Spring broke out and the winter roads were closed, and the order came to evacuate.

"Why did you return here just in the middle of January?"

"I did not work here then, I don't know," laconically answered the chief of the Samotlorneftepromstroy section, V. Kuzin.

Everyone finds his own argument that justifies the miscalculation. We were not able to find out on whose conscience it is that the cold housing stands empty, precisely who is guilty of all this mismanagement.

Two wells are ready today at Yershovoye for operation. Can they be started up so that, finally, the first crude will be obtained? No, they answer us, even this variant does not pass. Minneftegazstroy subunits are failing to meet the schedule for laying the pipelines. Thus the new field is stuck in the roads of interagency confusion.

Who has the capability to join the plans of the builders, power workers and oil-recovery workers--all the participants in the broad program to bring "fresh" reserves into development--into one? It would seem that USSR Gosplan's regional interagency commission should take a more active role in solving these questions. But the "Tyumen Gosplan," as it is known, is restricted basically to the establishment of negative facts and the issuance of recommendations that are not binding on anyone. Its role and rights clearly have been belittled.

Must we be surprised at the lack of the participants' coordination if there are hitches in the "scenario" itself? Let us cite just one example, but an extremely typical one. The oilfield workers are counting on introducing most of the areas intended for development, in the year 1986. But the roads for them are planned only for the fourth quarter.

Experience indicates: the startup of new recovery capacity can be speeded up through the wide use of the progressive outfitted-module method of construction. Its essence lies in assembling oilfield facilities not amid swampy forested tundra, but under factory conditions with finished box modules.

A modern enterprise, where the assembly of such modules has been given to a flowline group--Sibkomplektmontazh [Siberian Association for the Erection of Outfitted Modules], operates in the oblast center. We dropped in there

at a time when box modules for a universal pump station capable of repumping 2,000 tons of crude per day was being loaded onto railroad flatcars. On the side of one of them the destination was written in large letters: the Nikopol field.

"We assembled the booster pump station for Nikopol far ahead of the deadline," installer-brigade leader V. Gribov states. According to the schedule, its startup is planned for October. But we knew full well: if the heavy equipment is not brought to the field during the winter, then it will have to wait until the next freezes. Therefore, we appealed to all the plant's workers with a call to reexamine the deadlines for shipment."

At the brigade leaders' meeting it was decided to manufacture in the first quarter the equipment for the fields whose deadlines for introduction had been set for the spring-and-summer season. An admirable initiative! But the association supervisors fear that it can wither at the root.

The client turned out to be not ready for the fast pace proposed for the workers. Glavtyumenneftegaz was not completely able to provide the installers with the components and parts for equipping the box modules. Right now one-fifth of the 320 modules have not been completely equipped.

The problem that we encountered at the Sibkomplektmontazh Association goes far beyond Tyumen. Dozens of enterprises of many industries in various parts of the country are working on the program to develop the new fields. The program's successful fulfillment depends greatly upon the suppliers of machinery and equipment.

The Uralmash association behaved with complete understanding toward the oil-field workers' concerns. Recently a representative delegation of machine-builders under association general director I. Stroganov visited the Ob region. In turn, the Deputy Minister of Petroleum Industry and Glavtyumenneftegaz chief V. Grayfer made a trip to Sverdlovsk. The result of the "exchange of visits" became a commitment for the Uralmashers: to ship to the Siberians in the first quarter not 24, as the plan called for, but 32 highly productive drill rigs, which are very much needed at the new fields.

The supervisors of certain Minkhimmash enterprises displayed a completely different approach. The Yasnogorsk Machinebuilding Plant, Bugulmaneftemash, Tikhoretsk's Krasnyy Molot and Ashkhabad's Neftemash delayed the dates for manufacturing oilfield equipment planned for the first quarter to the last day of March. Instead of accelerating shipment, as the tense situation at Tyumen requires, here they adopted a different tactic: "stretch the rubber" to the last ditch. As a result, the pumps for the booster stations, the gas separators, and the tanks now are hardly likely to arrive at the oilfields on time.

The large number of temporary structures at the new fields in the Tyumen North strike the eye. Temporary LEP's [power lines] and substations, temporary boilerhouses, temporary housing, temporary winter roads....Many of the young oilfields have been operating for a long time under temporary operating arrangements. It is natural they they do not give their proper yield.

The question arises spontaneously: aren't the Tyumenites spread out too much? Isn't there a danger of hitting the extreme? For the final aim is not to chalk up the highest mark in the listing of fields contemplated for mastery, to "peg out" the largest section possible. But to master the fields in the full sense of this word: to construct all the structures necessary (not temporary but permanent ones!), and to create a strong working collective. And, as a result, to bring the oilfields up to the designed operation as quickly as possible and to obtain thereat a meaningful addition to Tyumen's crude.

[Article by A. Petrov under the rubric "West Siberia's Oil--a SOTSIALISTICHESKAYA INDUSTRIYA and TASS Action": "Echo of a Breakdown"]

[9 Feb 86, p 1]

[Text] Here's what's the matter. The Tyumen oilfield workers' plan for January was not fulfilled. And this is very depressing, for they tried with all their might. They fell short of the plan by more than a million tons, although the average daily recovery did grow by 11,000 tons over the previous December.

We told in the papers of our report about the causes of the tenseness that has been created at West Siberia's oilfields. Today we talk about one of the causes.

Before me is a business paper in which Minnefteprom [Ministry of Petroleum Industry], Gossnab and the Tyumen Oblast Party Committee analyze the present at West Siberia's fields. The text, together with the headline and the signature, take up one small page. But the echo of this small page is giving a headache to the supervisors of various levels, with millions in losses to the country's economy. This business paper is called: "Certificate of Shortfall in the Delivery of Special Vehicles and Equipment for Glavtyumenneftegaz [Main Administration for Oil and Gas Recovery in Tyumen Oblast] During January 1986."

Before naming the "guests of honor," I want to emphasize this side of the matter. Several days ago in Tyumen, when the results for January had been obtained, the First Secretary of the Oblast Party Committee G. P. Bogomyakov, said in a conversation with our paper's journalists:

"It is still difficult today for our oilfield workers. But we analyze the work of each recovery brigade, of each oilfield without an allowance for these difficulties. And we reward all according to their just desserts. Both those who have found reserves for carrying out the most strenuous plan and those who have let their opportunities slip by. But we would like also not to forget our partners...."

Yes, this is a correct requirement. Because it is not enough to have the crude in the ground, it still must be pumped out. Exactly--to pump it out, for the age of naturally flowing wells is past. Today the crude is taken by means of complicated equipment which the oilfield workers themselves do not make.



For the first time, the ones they invite for a joint summing up of January's results are our old acquaintances from Glavneftemash [Main Administration for Petroleum Machinebuilding]--the Azerbaijan Plants imeni Leytenant Shmidt and Dzerzhinsk, Sakinskiy Rabochii, and imeni Lenin, and some others. Tell me, how will the oilworkers be able to get oil from the underground storehouses if the Baku Plant imeni Dzerzhinsk failed to send 614 deep pumps in January? According to the norms for January, they were obligated to send 764 but the Tyumenites received only 150.

Other neighbors of the Dzerzhinskiers worked no better. Last Wednesday they were subjected to criticism of Kishla Plant supervisors in SOTSIALISTICHESKAYA INDUSTRIYA's pages for poor quality of output and an irresponsible attitude toward the fulfillment of an important state task. And today we cannot remain silent about the next trip-up of the oilfield workers: in January the Tyumenites received from this plant not one of 17 Azinmash-37A lifter units.

We have already reported that many slipshod workers who have failed West Siberia's oilfield recovery workers manage in some way or another even to get a bonus, and some get almost into the ranks of advanced workers. It is apparent that some of those who failed to ship equipment in January also stand in line for awards. It would be correct to hold off on them. Indeed, for example, the Tyumenites failed to receive from Glavneftemash plants during this period more than 500 units in all of very badly needed equipment. It was precisely in January that it was extremely necessary, for during that month the foundation is laid for the pace for the quarter, and that sets the pace for the whole year.

West Siberia's crude is a national matter and this formulation settles everything. It is apparent that it is also logical to draw the following conclusion: he who turns out to be in arrears in this national matter cannot claim honors for January's results.

The fact that among those who trip up the oilfield workers must be included the collective of the Balashikha NPO Kriogenmash [Science and Production Association for Cryogenic Machinery] of Moscow Oblast provokes special surprise. By the end of January the Tyumenites had failed to receive from here 64 of the 159 submerged electrical pumps that had been planned. Well, is it possible to start off the year like this? Can it be that the advanced collective of NPO Kriogenmash behave so disrespectfully toward their northern partners?

Leningrad and Ishimbay, Nalchik and Lebedyan, Almet'yevsk and Livny, and Podolsk, Tashkent, Yerevan, Krasnodar and certain other cities are on this alarming list, which tells about the inefficiency and irresponsibility of the suppliers. These cities have helped much and will help the Tyumenites. But today the oilfield workers of the north are in arrears to the country, and their enumerated partners are in arrears to the Tyumenites, and that means, to the country also. One must not allow this arrears to increase in February and stretch itself into an avalanche of failures.

We hope that the party committees of the enterprises named (and of those not named) and of the cities take all orders for the North's oilfield workers under their rigid monitoring. The matter demands it.

[Article by the Heavy Industry Section of SOTSIALISTICHESKAYA INDUSTRIYA under the rubric "West Siberia's Oil—a SOTSIALISTICHESKAYA INDUSTRIYA and TASS Action": "There Is Someone from Whom to Take an Example"]

[12 Feb 86, p 1]

[Text] The oilfields in January

The Ministry of Petroleum Industry has cited the work results of the industry's collectives in January. This is how a current consolidation on fulfillment of the monthly plan by leading Minnefteprom [Ministry of Petroleum Industry] oil-recovery associations appears:

Main Administration for Oil and Gas Recovery in Tyumen Oblast as a whole	95.5
Nizhnevartovsk Oil and Gas Recovery Association.....	94.4
Yugansk Oil and Gas Recovery Association.....	100.5
Surgut Oil and Gas Recovery Association.....	101.1
Varyegansk Oil and Gas Recovery Association.....	87.2
Noyabrsk Oil and Gas Recovery Association.....	81.9
Krasnoleninsk Oil and Gas Recovery Association.....	101
Tatar Oil Recovery Association.....	100
Bashkir Oil Recovery Association.....	100.4
Komi Oil Recovery Association.....	100.9
Mangyshlak Oil Recovery Association.....	100.5
Kuybyshev Oil Recovery Association.....	100.3
Tomsk Oil Recovery Association.....	96.2
Perm Oil Recovery Association.....	100.3
Orenburg Oil Recovery Association.....	99.7
Udmurt Oil Recovery Association.....	100.3
Groznyy Oil Recovery Association.....	100.9
Turkmen Oil Recovery Association.....	103.2
Ukrainian Oil Recovery Association.....	100.6

An analysis of the January data yields a basis for speaking about certain positive achievements, even if they are small, of the oil-recovery workers. For the ministry as a whole the average daily recovery of crude increased by 14,000 tons over December's. The number of lagging enterprises was reduced from 11 to 5. While last year a third of the associations did not cope with the plan, now the figure is one-seventh.

The high reputation of the competition leaders of Nefteyugansk is again confirmed. They showed an example of precise, well-coordinated work under the complicated conditions of Tyumen's North. To their account in January is the largest amount of crude above the plan—30,000 tons. The Surgut, Kuybyshev, Groznyy, Turkmen and Perm oilfield workers got off to a confident start. The success of the Siberian branch of Bashneft is especially to be noted. At the Kogalym fields, which it is operating, fuel recovery has doubled since the start of last year.

However, the achievements of the leading enterprises can in no way be a cause for being easygoing. The situation in the industry remains tense, as previously. In January, Minnefteprom was in arrears to the country more than 1.2

million tons of crude and gas condensate. The state plan was carried out by only 97.6 percent.

The main responsibility for failure of the plan lies with the supervisors of Glavtyumenneftegaz (the chief is Deputy Ministry of Petroleum Industry V. Grayfer). The oilfield workers of Nizhnevartovsk, Noyabrsk and Varyegansk oil regions are holding the Siberians back today. It is precisely because of these three associations (the general directors are L. Filimonov, V. Gorodilov and N. Zakharchenko) that account for the lion's share of the industry's arrears. The collectives of the Tomsk Oil Recovery Association collectives and of the Tyumen subunits of Tatar Oil Recovery Association started the year with a surge.

Much is being done in the main oil region to overcome the lag. In each recovery administration and at every field, schedules for accelerating the work are being prepared. However, the best measures, those that are well-thought out in detail, remain on paper, not having been reinforced by a system for organizing implementation that is just as proven and precise. Precisely such a system, which would embrace all elements of the complicated complex in their interactions, is still lacking here. This engenders numerous slip-ups, which adversely affect the final result.

There is, for example, this problem. The monthly plan for penetration by the operating wells in West Siberia has been overfulfilled, more than an additional 100,000 meters of rock have been drilled through. Judging by this indicator, the drillers must be congratulated for their great success. But here is the trouble with it: the wells drilled through often stay idle for a long time for various reasons and do not produce actual additional increments of recovery. The progressive method of turnover of recovery capacity, turnkey style, still has not become the mandatory rule at Tyumen fields. The amounts of drilling at new fields grow slowly.

Our newspaper and TASS are right now conducting a joint action--"West Siberia's Oil." The published papers named the leaders of a number of ministries, agencies and enterprises upon whom solution of the severe problems of the Ob's petroleum depends. Let us recall: the readers are waiting for businesslike answers from officials about the essence of the questions posed, and concrete reports on measures taken in regard to the critical reports in the newspapers.

[Article by V. Zhilyakov (Tyumen) under the rubric "West Siberia's Oil--a SOTSIALISTICHESKAYA INDUSTRIYA and TASS Action": "And the Loads Are Ahead of Schedule!"]

[12 Feb 86 p 1]

[Text] The SOTSIALISTICHESKAYA GAZETA editorial board and TASS are waiting for an answer:

From the Deputy Ministry of Construction of Petroleum and Gas Industry Enterprises Yu. Andreychev:

"What current measures are being taken by the ministry to accelerate the unloading of cars that arrive with equipment for building the fields of Tyumen's North?"

Thousands of freight cars waiting to be unloaded have accumulated on the Serov and Surgut divisions of the Sverdlovsk Railroad. Whole trains with freight for building up the oil and gas fields of West Siberia have been turned into warehouses on wheels.

When freight for Krasnoleninsktruboprovodstroy [Krasnoleninsk Trust for Pipeline Construction] arrives at the Nyagan Railroad Yards, the work practically stands still. The trust acts disdainfully toward freight-car unloading.

"In February, not once did it process on time the cars that had arrived for it," says A. Lazarev, acting chief of the railroad's Serov Division. "For example, last Friday, out of 184 freight cars that had arrived with pipes and parts for housing, little more than 50 were unloaded and, on the day before, even fewer--39. A hundred and fifty cars to be unloaded have accumulated."

Other Minneftegazstroy [Ministry of Construction of Petroleum and Gas Industry Enterprises] collectives that receive freight at the Peley Railroad Yard, which is on the Tyumen-Surgut-Urengoy line, have a pace just as slow. They, just like their colleagues at Nyagan, knew previously that freight arrives in an avalanche precisely at this time of year: the development of new oil fields has started here. But they had not prepared for it. On 7 and 8 February, for example, more than 100 cars per day remained unloaded.

Is there a way out of the situation created? It would seem that a more active policy should have been adopted by the Minneftegazstroy staff in Tyumen--the main regional production-management administration (the chief is V. Igolnikov) above all should adopt a more active attitude. But here they are still limited to statements of facts and to the presence of their representatives at teleconferences. For example, Nyagan from the very start has been able to do unloading, rerouting a portion of the trains to nearby railroad yards--the Geologicheskaya and the Priob, and to organize assistance by neighboring subunits of Glavsibtruboprovodstroy [Main Administration for Pipeline Construction in Siberia]. Catastrophically, there are not enough lifting cranes, pipeline transporters and other equipment at the unloading platforms. Thus, at the Peley Railroad yard, the unloading front enables operations on both sides, which would speed up train-handling severalfold. If the main administration would make an analysis of the existing technology, it would pay attention to the fact that work on the night shift is practically unorganized. During a recent night here, the brigades unloaded only 12 cars.

Freight recipients at the most northerly points of the Nadym and Farafontyevskaya region, to which the stream of freight is increasing right now, must allow for errors committed by the oil and gas pipeline builders. But in order to avoid the further accumulation of cars there, perhaps it would be worth while for the railroaders to recall their own experience gained during construction of West Siberian mainlines? And equip ahead of time several stations on the Novyy Urengoy-Yamburg Gas-Condensate Field Railroad, which is under construction, for temporary unloading. This will relieve the stress on the basic line.



"We are ready this very day to start such work at the Tundra Railroad Yard, the closest and most convenient for Arctic freight recipients," says V. Antonyuk, manager of Urengoytranstroy [Urengoy Transport Construction Trust] convincingly. "Fill has been dumped for the platform, but we cannot start to lay the railroad yard's tracks: there are no rails or fasteners."

How many are needed? Some 6.3 km, it turns out. It seems that the Ministry of Railways would help to find them. But one must not forget they are needed today.

Integrated development of the Tyumen North makes special demands on everyone. Time has already shown that red tape is the main interference in the development of this region, which is important to the whole country.

[Article by P. Krupoder, metal reheater of Nikopol's Southern Pipe Plant; A. Kromskiy, inspector of the city People's Control Committee; S. Kravchenko, TASS correspondent; and V. Pryadko, SOTSIALISTICHESKAYA INDUSTRIYA's own correspondent (Dneprodzerzhinsk-Nikopol), under the rubric "West Siberia's Oil--a SOTSIALISTICHESKAYA INDUSTRIYA and TASS Action": "What the Percentages of Losses Are"]

[14 Feb 86, p 1]

[Text] Members of TASS's and SOTSIALISTICHESKAYA INDUSTRIYA's worker-correspondents' post, which was established at Nikopol's Southern Pipe Plant, visited the enterprise's chief subcontractor--the Metallurgical Combine imeni Dzerzhinsk. It was necessary that the collective explain what it is doing to raise the quality of its output, which, in the final analysis, is reflected in the reliability of pipe for West Siberia's oilfield workers.

The metallurgists greeted us somewhat unusually:

"Are Nikopol's pipemakers complaining? Why didn't they notify us?"

We could have ignored such questions, but they have been put to us very often now. They were heard at various levels of the combine, and they had more resentment than desire to get down to the heart of the matter. And even then, in conversations, they tried to convince us, saying that the pipemakers are hypercritical and there's no way to please them. However, the skelp that the Nikopol piperollers get has flaws more often than not. Although a ramified technical inspection service follows up on quality at the combine.

In answer to the question, how many inspectors does the enterprise have, the combine's OTK [technical inspection section] chief N. Levoshich could not say precisely. Their number here approximates 300. In order to be persuasive about the effectiveness of the inspectors' work, Nikolay Vasilyevich pointed to the results of the annual analysis conducted by the OTK service. While rejects were 0.82 percent of all skelp output at the start of the 11th Five-Year Plan, they had been cut to 0.18 percent at the end of 1985. Four-fold! The only thing left to do was to praise the Dneprodzerzhinskians.

But we are also trying to make comparisons. Last year the enterprise's collective shipped 130,900 tons of skelp to Nikopol's pipemakers. Of this amount, the Southern Pipe Plant's receiving control rejected 5,500 tons. Four percent! Then where did the 0.18 percent come from? Something does not jibe....

Together with deputy chief of the combine's engineering section, L. Chevella, we went over the whole technological chain of the skelp's birth. In the open-hearth department we conversed with production foreman G. Kalinichenko. Under him were three furnaces, at which N. Khrisanfov, V. Podurushin and V. Mu! were the steelmakers. Just now they had produced the next melt from one furnace.

"What kind of grade?"

"Special," the foremen answered briefly. "For casing."

"Did it turn out?"

"Of course...."

Kalinichenko does not say much in answering our questions, and he carefully chooses his words. We are very much interested in whether the steelmakers produce for skelp steel that has not been made to order.

"It happens," he says. "We are all guilty here. We have, it is true, not so much, about three ladles a month. About 2½ percent. What are the causes? They're varied: sometimes the ladle gets dirty, sometimes we do not deoxidize enough, or we overheat the metal, because of which rejections by the piperollers are then increased."

The next shop--the new rolling department--adds its own defects, although there are no few OTK observers here. Senior foreman of the skelp mill V. Pecheritsa explains:

"We have one inspector who follows up on ingot fix in the soaking pit, and a second one looks at ingot discharge, and so on. But this observation is visual. The incandescent ingot is carried along on the roller tables, and one can see only the top, while you can see nothing underneath. If the inspector manages to notice a defect, the ingot is taken out on a rack and sent to the rolled-stock warehouse. Minor defects are chiseled out there and the ingot is again sent to the soaking pit."

But when flame scarfing does not help, the ingot goes to rejects. Two or three are collected from each melt, and this alone is more than 20 tons, which is about 10 percent! And this is only what is caught by eye. Then, after the billet mill, the next checking and scarfing is at the adjustage.

Here the roller workers have their own steaming. The inspectors, and they are mainly women, have their legs run off, as we say. They inspect attentively the skelp that is taken from the cooler. Each one! They note all defects with chalk, then there is flame scarfing and a new examination. It would seem that there is no way a defect will pass. However, even here

everything is by eye. The inspectors are equipped only with depth gages, which measure the depth of the cutouts, and with brushes for cleaning off the scale where they can.

"Improvement of the inspection system is long overdue," says V. Chelyadin, assistant to the chief for technology of the new rolling department. "It is ridiculous, in the age of the scientific and technical revolution, to determine quality with brushes. Specialists of DonNIlchermet [Don Scientific-Research Institute for Ferrous Metallurgy], the chief developers for skelp, and scientists of the Ferrous Metallurgy Institute visit our department, study our technology and sort of improve it. Then they leave and everything is the old way."

Combine director Nosov told in detail what measures Dneprodzerzhinsk metallurgy workers are adopting to improve metal quality. Requirements have been tightened up for all conversions. Planned is a rebuilding of the new rolling department, where a straightening section is to be created.

"We are getting ready to build a straightening section by the in-house method," said Konstantin Grigoryevich. "I think we shall cope with it. But we shall introduce it in 1988. The cost of the facility is about 10 million rubles—we have to make it less expensive, and already some of our specialists have ideas. At Donetsk, for instance, we looked at equipment for straightening 150-mm skelp. It can be modernized and installed at our place."

The prospects, as they say, are encouraging. But have they not been delayed for a too distant future? Indeed, that which the combine director speaks about can, as yet, be seen only on paper. But West Siberia's oilfield workers need high-quality casing right now, they cannot wait such a long time.

It is true, the Dneprodzerzhinskians must be given their due. After the newspapers' reporting on Nikopol's Southern Pipe Plant, they, without waiting for the arrival of the surprise inspection brigade, planned and confirmed measures for improving the quality of the skelp's surface.

[Article by Ya. Ali-Zade, G. Bazhutin, Yu. Belanov, V. Zhilyakov and V. Kremer (Tyumen) under the rubric, "West Siberia's Oil—a SOTSIALISTICHESKAYA INDUSTRIYA and TASS Action": "Where the Goal Was Not Monitored"]

[18 Feb 86, p 1]

[Text] The SOTSIALISTICHESKAYA INDUSTRIYA editorial board and TASS are waiting for an answer:

From USSR Minister of Power and Electrification A. Mayorets:

"What specific measures is the industry's staff taking to increase reliability of the Ob oilfields' power supply?"

"How is solution of the problems of reequipping and radically improving housing and everyday-living conditions for Tyumen power workers, which have come to a head, to be speeded up?"

At the fourth oilfield of the Mamontoneft Administration, the wells came to a halt and the drill rigs stopped. An agitated foreman, A. Kirsanov rushed to the telephone.

"An accidental cutoff," he explained after a minute. "Today again, we shall be short 100 tons of oil...."

Last year about 200 such cutoffs occurred at Glavtyumenneftegaz [Main Administration for Oil Recovery in Tyumen Oblast] fields because of powerline malfunctioning. According to the specialists calculations, this led to a loss of more than half a million tons of oil.

What are the causes of poor reliability of the power system for oilfields of Tyumen's North? How is an uninterrupted supply of electricity to be provided for? These questions were put on the agenda for a business meeting in Tyumen organized by the SOTSIALISTICHESKAYA INDUSTRIYA editorial board and TASS. Taking part in it were leading specialists of Glavtyumenneftegaz and Tyumenenergo [Tyumen Oblast Main Regional Administration for Power Systems Management], supervisors of northern enterprises that build power facilities, and workers of the Interagency Regional Commission under USSR Gosplan.

"The power problems of the Ob oil regions nowadays result from serious errors that USSR Minenergo [Ministry of Power and Electrification] committed during an evaluation of the prospects for developing the region," chief of the "Tyumen Gosplan" subsection V. Roslyakov declared at the meeting.

Rejecting the oilfield workers' calculations for the long term, the power workers, when they prepared their plans, proceeded from the demand for power that actually prevailed when flowing wells dominated the scene here. But now the era of conversion to the mechanical forcible-recovery method has set in, under which tens of kilowatt-hours of electricity must be expended for the extraction of each ton of fuel. The fields' power consumption has grown severalfold. Decisive measures are required of the ministry.

Tyumen subunits of the All-Union Construction and Installing Association, Soyuzzapsibenergostroy [Association for the Construction of Power-Industry Facilities in West Siberia], erected 18 power units at the Surgut GRES in record time. At this and a large number of other large facilities, enormous resources have been assimilated. The ministry's reports began to appear with comforting data to the effect that the situation was being corrected and that the shortage of electrical power had been cut by two-thirds. However, the opinion of Siberia's oilfield workers is unequivocal: The power problem today has become still more severe than it was yesterday. How is that?

Two figures were cited at the business meeting that explain this--at first glance--paradoxical situation. During the last five-year plan, capital investment for building electric-power stations rose 4-fold, but only 20 per cent for the erection of the power grid.

After throwing all their efforts into capital-intensive and prestigious facilities, the power-facility builders built up each year an arrears in the



erection of substations and LEP's [electric power lines]. By the end of the five-year plan, they had reached impressive dimensions. About one and a half thousand kilometers of power lines called for by the plan had not been built, and almost half of the substations planned had not been introduced. Deputy chief power engineer of Glavtyumenneftegaz, V. Vatolin, vividly pre-ented the consequences of this approach:

"Many of our lines are operating right now at their maximum. Moreover, most of them were built under temporary schemes and are often unreliable. A short-circuit at one section leads to the 'disintegration' of large power engineering centers. And not individual well clusters but who'e fields, the rotating-duty worker settlements, and even whole cities are left without electricity."

Alarm signals come from the oil-and-gas recovery administrations: because of the accidental shutoffs and lags in the construction of LEP's, the plan for the first quarter for oil recovery and for deadlines for introducing new fields into operation are threatened with failure. The breakdowns in the power supply, in the opinion of the meeting's participants, have become a serious brake on the work of Tyumen oil-recovery workers.

The power-grid builders have now been posed a difficult task: not only to make up for last year's arrears but also to increase their annual volume of operations more than 1½-fold. Are the network trusts of Soyuzzapsibenergo-stroy ready for such a spurt?

In answering this question, manager of Zapsibelektrosetstroy [Trust for the Construction of Electric-Power Supply Lines in West Siberia] N. Lipatov recalled this story:

"The next power unit was turned over at the Surgut GRES. An impressive commission from Minenergo arrived. They examined the high-powered turbogenerators and the central control panel. Then someone remarked: 'And now they have gone to the old-fashioned poles.' This was said about us, the grid workers as a sort of joke. But I must confess I was irked. For the scorn was manifested not only in words but on a serious matter. The LEP builders are today attacking the taiga with axe and saw in hand. And they look with envy at the neighboring logging tracts--they operate with high-powered machinery."

In order to erect one support, which is sent to the routes in bulk, they have to turn up to 2,000 bolts manually with a spanner wrench, in the cold. But supports made of roll-formed plate which consist of two or three sections and are easily and rapidly erected were developed long ago. Such supports also have been incorporated in the design of Tyumen LEP's, but Minenergo can in no way get series output from its enterprises.

And the use of "flying cranes"--helicopters--which can erect supports from the air, increases labor productivity 8-fold to 10-fold. However, this progressive method is hardly used in Tyumen.

There is a severe shortage of even the most ordinary machines. And those that are present are, for the most part, idle, as one of the meeting's

participants noted, "in hopeless expectation of repair." In an actual case some small pinion flew off and they took the machine across the entire country to a plant. There has been talk for some years about creating a repair enterprise in Surgut for the power workers. The power-line workers still are receiving neither machine-tool equipment nor spare parts for their low-powered machinery.

The oil-recovery workers are presenting no few claims also against the quality of power-grid construction. On one support, the "foot" does not reach to the footing, and another generally leans heavily to one side. At the Pogranichnoye field the commission did not accept for 3 months a "ready" LEP because of numerous inadequacies.

"The criticism is correct," N. Lipatov acknowledged. "Although, to be honest, at times I do not know how, under our conditions, high quality will be achieved. Although the double speedup called for by the five-year plan must be achieved with those same forces."

"The power-line trusts badly need augmentation," chief engineer of Tyumenenergo I. Davidovskiy thinks. "When the first LEP's were built, they spoke like this to people: now we will turn this facility over--and farewell, Tyumen! But they turned over both that facility and the next one, and now electric-power line supports are stepping across the Arctic Circle, and the operations will not contract. While the designs that come from Energostroyekt [All-Union State Survey, Design and Scientific-Research Institute for Power Systems and Electric-Power Networks] are, as the builders say, "just squares and string"--the substations and the power lines. There are no "luxuries" in the form of housing, kindergartens and similar social, cultural and similar domestic amenities.

On the eve of the meeting, we visited the Divny settlement for power-facility builders. Six thousand people live here, almost all of them in mobile housing, a large portion of this temporary housing having been here almost since the days of the pioneers who worked their way across the taiga district. The mobile housing has managed, in the literal sense of the word, to grow into Tyumen soil.

The supervisors of the trusts were not able to give a definite answer about when the thousands of workers and specialists who now live here in temporary housing and in huts on skids will obtain apartments with the amenities. Although a real possibility for solving the housing problems would seem, finally, to have appeared.

At the start of the last five-year plan a housing construction combine was started up specially for the power-workers needs. But it did not, alas, live up to expectations. First, until now it has been operating miserably. Second, the association often uses the DSK [housing construction combine] for plugging up the gaps that formed in the deliveries of reinforced concrete for industrial construction. Concern about people's everyday needs was relegated to the background.

"In objectively evaluating the situation," said V. Roslyakov, representative of the Interagency Commission under USSR Gosplan, "one must recognize that the amount of work on the construction of LEP's and substations that is

planned for the five-year plan period is not within the capabilities of Tyumen's power-line workers. Several mechanized columns must be redeployed here at once, to create another two new trusts."

The augmentation, it stands to reason, would be very appropriate. But how are the present forces being used? Here is what V. Tugay, manager of the youngest trust, Krasnoleninskelektrosetstroy [Krasnoleninsk Electric-Power Network Construction Trust], said at the business meeting:

"The order to create our trust was signed in February last year. All the ministry's funds and the ceilings on them had, naturally, long been distributed. For the plan for this year was 6-fold greater than last year's, although the degree of provisioning with equipment was approximately that much less than the requirement. We appealed with letters to First Deputy USSR Minister of Power and Electrification Comrade Sadovskiy, and to the minister himself, Comrade Mayorets. We reported on our calamitous situation and asked for help. But no answer has been received."

Of course, such an attitude on the part of the ministry to messages from the field is no good at all. But why do the trust's supervisors appeal to the staff of the branch directly, over the head of their direct supervisor in Soyuzzapsibenergostroy? How can it happen that association chief V. Filonyuk remained unaware of the misfortunes and needs of the new subunit?

"And so, to the ministry and no lower," resounded someone's rejoinder.

Yes, Soyuzzapsibenergostroy's--the association's--management apparatus, which has been established specially for the development of West Siberia's power engineering, is located in Moscow. It is easy to imagine how difficult it is for the Siberians to coordinate problems that require immediate solution. It is not surprising that a good bit of the Tyumenite specialists' worktime is spent preparing answers to inquiries from the capital. The association's supervisors simply are not able during their short visits to Tyumen to penetrate into the essence of local problems.

Krasnoleninskelektrosetstroy's manager acquainted the meeting's participants with a memorandum report by mechanical engineer V. Korovin which he had received. Let us cite an excerpt from it: "In regard to the provisioning of spare parts, I was forced to appeal to Yu. Sidorov, a Tyumenglavsnab [Tyumen Main Administration for Supplying Materials and Equipment] worker. He refused to solve this problem and sent me to his chief, V. Sobstel. Not getting a positive solution from him, I turned to the Soyuzzapsibenergostroy representative, I. Alekhin, who did not occupy himself with this, saying that the question is not for Moscow but a local one....I will cite for your information that the spare-parts question was left unresolved, and I do not know when it will be addressed again."

Many other questions upon which the reliability of a power supply for Siberia's oilfield workers depends is, as is said, hanging in the air. The Tyumen power-grid workers current difficulties come to a great extent from the low level of supervision. Administration must be brought closer to production. All the participants of the business meeting supported this thought.



[Article by D. Melikov (Baku) under the rubric, "West Siberia's Oil—a SOTSIALISTICHESKAYA INDUSTRIYA and TASS Action": "The Demand Was Strict and Correct: Thoughts After the Meeting of the Party's Economic Activists"]

[22 Feb 86, p 2]

Even from the stenographic record—this fearless record of progress of the meeting, it was evident that: the talk was, to the maximum, exacting and direct. The party's evaluation of the situation: the state of affairs in the republic's petroleum machinebuilding complex is unsatisfactory. The conclusions also were appropriate—the supervisors of the main administrations and enterprises were told: if they do not reorganize their work and do not cease the production of unsuitable oilfield equipment, they can expect to meet with strict party and organizational measures.

A meeting of the party's economic activists from the Main Administration for Petroleum Machinebuilding workers was convened the other day at the Azerbaijan Communist Party Central Committee. The necessity for the talk was stimulated by the mutual relations of the partners (Azerbaijan's machinebuilders and the customers for their output—the country's oilfield workers, primarily those of West Siberia), which have been extremely strained recently.

In the oilfield workers' opinion, the drop in oil recovery at Tyumen fields is to a great extent the "accomplishment" of Baku's machinebuilders. The equipment that they deliver is poor, and the quality of its manufacture is low. Moreover, it has been chronically in short supply, and even that which arrives is in need of serious reworking.

Bases with a total area of more than 160,000 m<sup>2</sup> have been constructed in Glavtyumenneftegaz [Main Administration for Oil and Gas Recovery in Tyumen Oblast] alone for testing, restoring and repairing equipment. Eight thousand people work at them. But yet we are talking about a region where the problem of manpower is extremely severe.

The poor state of equipping of the Baku plants is the main cause of the output of poor-quality equipment for the oilfields. But not the only cause. An analysis of the customers' complaints reveals things that literally were astonishing: 60.4 percent of the defects were the result of elementary carelessness in manufacturing.

The scourge of the plants is the lack of test benches—this also was mentioned at the meeting. Right now this has turned into the biggest problem: the oilfield workers are refusing to accept output without full-fledged testing. But here is a curious detail: from talks with Glavneftemash [Main Administration for Petroleum Machinebuilding] I found out that the designs for at least 20 of the 40 needed test benches were developed long ago by the branch's industrial institute but they simply have not been produced.

As to the cause, Deputy Minister of Chemical and Petroleum Machinebuilding V. Reznichenko remarked at the meeting, "Glavneftemash is actually chopping off the branch it's sitting on. It is intolerable that toolrooms are up to their necks in series output."



I will note for the sake of fairness in the last 10 years the volume of products manufactured at the Baku plants has grown 3-fold. Perhaps no one in Minkhimash [Ministry of Chemical and Petroleum Machinebuilding] can boast about such a pace. But this leap was not accompanied by the earnest introduction of new capacity or by the reequipping of existing facilities. As a result the share of manual labor at the plants right now exceeds 30 percent, and the capacity's utilization coefficient has reached 0.99. And, to boot, there are still "one-time orders" for nonstandard equipment for the subway, Minpromstroy [Ministry of Industrial Construction], the Sports Palace, and so on, which the republic needs.

Having taken up at one time the path of purely quantitative growth, the main administration has loaded up even the experimental-test sections of its scientific subunits with series production. The problems of quality and technical level of the output and the tasks of reequipping the production facilities were put to the side all these years.

"Now we should be talking about a qualitatively new era in the development of the petroleum industry on the basis of complete outfitting with the use of electronic and microprocessor equipment, and a new generation of transport facilities--in brief, equipment that will support reliable operation under difficult climatic and geological conditions." That's how V. Pimenov, First Deputy Manager of the Machinebuilding Section of the CPSU Central Committee, who addressed the meeting, formulated the task. "But, as far today is concerned, we even lose not so much from the equipment itself but from the poor organization of affairs. Supervisors should have, first, a minimum program: remove the filth from the departments and put an end to disorderliness and irresponsibility. It is necessary also to be stricter in holding accountable those who reconcile themselves with deficiencies, who try to avoid the solution of specific problems, and who do not want to draw the correct conclusions. And second, it is necessary to develop as quickly as possible for each enterprise, calendar schedules for shipments of equipment to the oil-field workers, bringing them down to 10-day periods, and daily monitoring."

The machinebuilders were told frankly: the time for persuasion has passed. Impermissible slowness and sluggishness have been tolerated. Substantial additional tasks for shipping equipment have been established for them.

Does everyone understand the task, did they manage to bring concern to each worker? After the meeting, I visited two Baku plants.

"In my view, the essence of the problem is that the personal responsibility of the individual in the production flowline has been lost," considers Sabir Musayev, Delegate to the 27th CPSU Congress, USSR State Prize Winner and brigade leader of the Castings Plant imeni P. Montin. "If a defect becomes anonymous, then the slipshod worker will easily survive. At our plant we have broken this system, we have begun to point to the originator of each component and part. When bugs are detected, the brigade and its supervisors answer personally for the defect that has been committed. The quarterly bonus is reduced and the people also bear moral losses."

Alas, the picture is completely different at the Plant imeni V.II Lenin. There is dirt, dim lighting and trash-strewn areas, output lies about on the earthen floor, and shavings are left completely uncollected under machine tools. We are coming to the end of February, and the oilfield workers' representative, the strict acceptance inspector Anna Dubina, accepted only one out of three gear boxes presented for turnover. More than 60 units should have been produced this month.

Lack of rhythm is the scourge of the main administration's plants. Actually, 50 percent of the output here is produced in the last--the third--10-day period of the month. The machinebuilders' sluggishness and the irreconcilability in quality evaluation of equipment by the oilfield workers' representatives have led to a fairly complicated situation: there is a difficult situation right now at the Kishla Machinebuilding Plant, where large numbers of reduction gears have accumulated. This chain reaction hits the Bakinsky Rabochiy plant, which cannot dispatch their pumping jacks without them. The Plant imeni Leytenant Shmidt, not having shipped its commodity, cannot pay for shipments made under cooperative agreements with other enterprises. The situation is reminiscent of a state of collapse, or a clog; extreme measures are needed to clear the logjam.

But, apparently, by way of measures, some people have in mind the creation of innumerable commissions. On the day that I was at the Plant imeni V. I. Lenin, at least seven levels were interested in product quality. I shall try to enumerate them: the commissions of the party's city committee, the party's rayon committee, People's Control, Gosstandart [State Standards Committee], the Baku regional inspectorate, the oilfield workers' acceptance personnel, and Minkhimmash's technical inspection service. Can it be that there are enough of them? And, as I have been told, there is such a merry-go-round at almost all the plants. And, indeed, two or three of the enterprise's specialists must be attached to each commission. Who is working in the departments, who is in charge of the necessary local rebuilding?

In thinking about today's excessive "commission" activity, I involuntarily come to the conclusion that this is similar to an attempt to chase a train that has departed. It is not by chance that a serious criticism was sounded at the meeting against the rayon party committees of the city of Baku. Questions of quality in the last 3 years have not been included in the agenda of bureau sessions. Here also the press's critical remarks are brushed off. SOTSIALISTICHESKAYA INDUSTRIYA issues were examined at Azerbaijan Communist Party Central Committee meetings, to which rayon party supervisors were invited, along with Glavneftemash supervisors. However, even after this, questions of quality still did not become the subject of examination by the party's lower-echelon committees. What's the reason for such indifference, why such unconcern for a lack of discipline? the question was reasonably put to the gathering.

Life requires a full yield and rapid action by all: the worker, the engineer, the manager and the party supervisor. Communists should be in charge of the work on reconstruction. There are 4,260 of them in Glavneftemash--one in five. You will agree that this is a vast force. And they should

be used completely. And then the results will not be slow in manifesting themselves. It is this thought that K. Bagirov, First Secretary of the Azerbaijan Communist Party Central Committee, emphasized in summing up the results of the meeting of the party's economic activists.

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GENERAL

PROBLEMS OF EKIBASTUZ INFRASTRUCTURE DEVELOPMENT

Alma-Ata IZVESTIYA AKADEMII NAUK KAZAKHSKOY SSR: SERIYA OBSHCHESTVENNYKH NAUK  
in Russian No 4, Jul-Aug 85, pp 74-80

[Article by V.I. Zhikareva: "Problems in Developing ETEK Branch Specializations  
in Developing the Pavlodar-Ekibastuz Territorial-Production Complex]

[Summary] The Ekibastuz Fuel and Power Complex is the largest and most efficient fuel and power base and can serve as the basis for development of large numbers of power-consuming production facilities. A solution to the problem of a balanced development of the various specialized facilities for the Pavlodar-Ekibastuz Fuel and Power Complex requires a well-founded and efficient functional structure of the system. The rapid growth of productive forces in this area places particular requirements on a well-balanced development of its economy. At present, processing industry facilities are lagging in the area, as is agriculture. The lack of social and cultural facilities also makes it difficult to attract necessary manpower to the area. The problem of development of transportation systems within the industrial area has not yet been fully solved. Delivery of coal to the first regional electric power plant in the area is a bottleneck, for example. The rapid growth of industry in the area places particular demands on construction organization. The construction of the coal handling component of the Ekibastuz Fuel and Power Complex has particularly lagged. A major organizational shortcoming is the scattering of production facilities among a number of unrelated departments. What is needed is an independent, goal-directed combined program, encompassing both technological and social-economic aspects of the problem. Environmental pollution is also a problem due to the great concentration of coal mining and the high ash content of the coal in the area. The assigned rapid development of coal mining in this area is not being achieved due to both technical and organizational problems. Efficient organization of the supply of materials and equipment and economically well founded displacement of facilities to reduce transportation distances within the region and allow more stable supplies would facilitate an increase in the stability of development of the economy of the entire region.

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GENERAL

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RATIONAL PLANNING, INVESTMENT URGED TO HASTEN PLANT CONSTRUCTION

Moscow ENERGETICHESKOYE STROITELSTVO in Russian No 11, Nov 85 pp 65-68

[Article by G.I. Yevlev and L. Yu. Sheinyuk, Engineers, and V.S. Zanadvorov, Candidate of Economic Sciences: "Planning Capital Investments and Construction-Assembly Works on the Basis of Norms and Deadlines for Completion of Power Stations"]

[Summary] The planned duration of construction of electric power plants usually does not correspond to the standards defined in SN 440-79. A computerized planning system has been developed to determine the quantity of construction work necessary for construction of a thermal electric power plant considering limitations both on capital investment and on resources. Plans for the construction of large thermal power complexes, such as the Ekibastuz and Surgut regional electric power plants, should be generated as independent goal-oriented programs, with capital investment for these complexes calculated separately from other construction projects. The standard volumes of construction work are calculated assuming a smooth and rhythmic flow, with the quality of work in process increasing to a certain maximum and then decreasing as the project is finished. Actual construction projects do not move this rhythmically and smoothly. The plans actually used in construction are computed from the standardized plans by linear adaptation of work rates considering the actual difficulties involved. A coefficient of arrhythmia is suggested to describe the influence of specific construction conditions which determine the provision of resources and conditions actually on the work site. Equations for performance of the corresponding calculations are presented. Analysis of the standardized distribution of volumes of construction and installation work adjusted to actual conditions on the basis of a study of 60 projects in the industry showed that in more than 60 percent of cases, the actual time in years required to put an object on stream corresponded to the expected values calculated using the equations suggested in this article. In almost 30 percent of cases, projects were completed early.

Figures 3, references 4: Russian.

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